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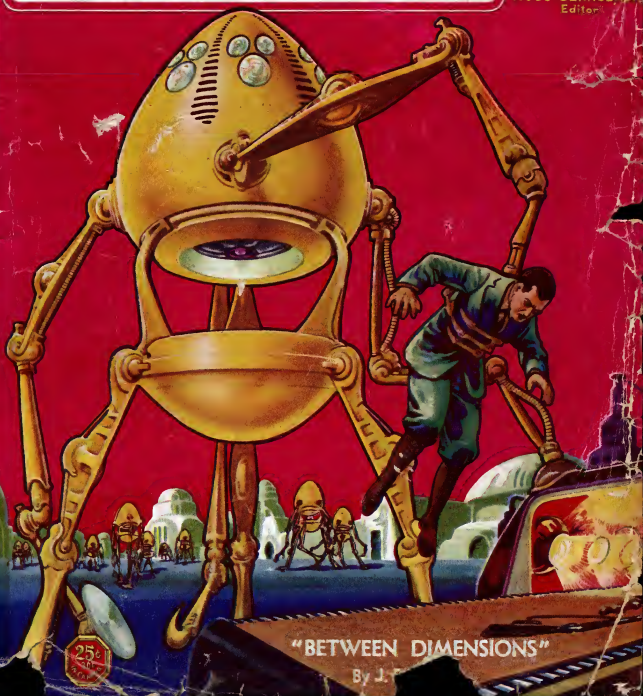
ADVENTURES OF FUTURE SCIENCE

October

WONDER Stories



HUGO GERNSBACK
Editor



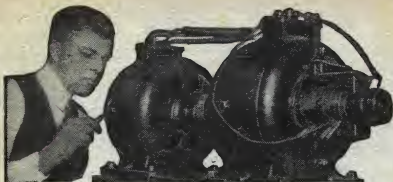
"BETWEEN DIMENSIONS"

By J. F.

WONDER STORIES

VOL. 3, No. 5

October 1931



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WONDER Stories

THE MAGAZINE
OF PROPHETIC FICTION

Vol. 3, No. 5

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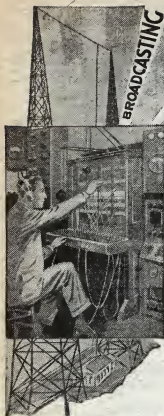
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Important

Announcement!

A YEAR ago, with the November, 1930 issue, the format of WONDER STORIES was reduced to a smaller size.

We believed at that time that the change to smaller size would be welcomed by the majority of our readers, and we continued printing the magazine at this size for a year.

It appears now, however, that the majority of our readers have not looked kindly on the change, and during the year, we were flooded with many thousands of letters, (the numbers, of late, have been increasing) urging that we should return to the larger size.

Most of the readers argued that a magazine of such educational value as ours should not be placed on a par with the "pulp" magazines of a more sensational type. A large percentage of our readers seem to think that the larger size with smooth edges was more dignified, and gave a better appearance to the magazine, than the smaller size with its rough edges.

Heeding these letters, and the overwhelming preference of our readers, we are going back to the larger size, which we formerly printed, with the next issue.

This issue, therefore, is the last that will appear in the small magazine size. Look among the large-size magazines for the next issue!

A PLEASANT SURPRISE!

The November issue of WONDER STORIES will also give you a pleasant surprise—something that many readers have been asking for, but which was not possible until now to give you.

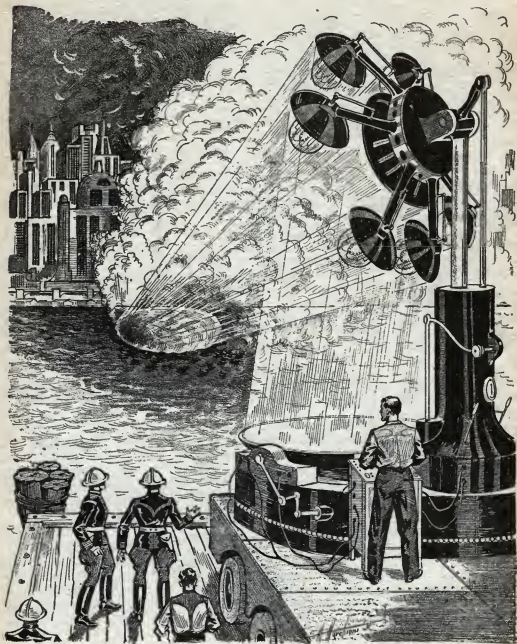
You will not only be surprised, but we are certain that you will also be highly delighted, with another important change which will also be incorporated in the November issue.

Inasmuch as there will be a large demand for the next issue, we advise you to place your order with your newsdealer at once, so you will not be disappointed.

The Publishers.

The Return of the Cosmic Gun

By Morrison F. Colladay



(Illustrated by Marchioné)

There was a flash of violet light and the river seemed to explode with a roar. A cylinder of incandescence penetrated the river . . .

The Return of the Cosmic Gun

THE big tri-motored transport plane had been flying through the fog for the past hour, guided by radio direction signals. Suddenly its motors stopped functioning. The two pilots forward held a rapid consultation while most of the passengers, realizing that something was wrong but not knowing what, gazed helplessly at them. Two or three left their seats and started toward the control compartment. One of the pilots opened the door leading into the main cabin and motioned them back.

"Nothing to be frightened about," he said. "Go back to your seats."

"But what has happened?" asked a nervous-looking elderly man.

"Something wrong with the motors. We'll make a perfectly safe landing if you keep cool."

Henry Carey and Bill Adams were sitting well forward in the cabin. They glanced at each other tensely.

"Fog's pretty thick," said Adams. "Can't see much. Maybe we won't hit anything."

"Looks bad, does it?" asked Carey.

"A life insurance company wouldn't regard us as good risks during the next five minutes."

The plane glided downward with both pilots staring intently below and ahead. As it neared the ground a sudden breeze light-

By the author of
"The Cosmic Gun"
"The Silent Scourge"

WATCHING the steady onslaught of the racketeer into every corner of our lives we often ask, "Where will it end?" No one knows, for it is certain that the more powerful the racketeer becomes the less resistance will be made against his further progress.

Naturally, if the racketeer is to compete with law and order he must become organized, he must make use of scientific instruments and in a sense become respectable. When that occurs, the racketeer will disappear and in his place will appear a business, carefully organized to prey upon other businesses and perhaps upon the government.

From that time a war to the death is inevitable. All the forces of the racketeer will be mustered against the full power of the law, and the ensuing conflict will take the proportions of a great national war.

Our author has taken a look into the not too distant future in this exciting story and gives us a startling view of what may yet happen.

the upper branches of a tree which the pilot at the controls made a sudden swerve to avoid, as it loomed out of the thinning mist. The wheels struck the ground, bumped for fifty yards over a meadow and collapsed, throwing the plane forward on its nose.

Most of the passengers were badly shaken up and bruised, but none was seriously hurt. When the first excitement was over the pilots began examining the motors. Finally one of them started across the fields to the nearest house.

"What went wrong?" Adams asked the other who remained with the plane.

"Motors stopped," he replied briefly.

"All three of them at once?"

THE pilot glanced at him. "You was up there, wasn't you? You know whether they all stopped or not."

Adams' eyes narrowed. "It seems to me that the plane had been sent out in bad condition. It's just good luck we weren't all killed. I'm going

to find out who's to blame."

"Sure, and tell me when you find out. I'd like to meet that guy for about five minutes."

Adams looked at him keenly. "Some-

body's been fooling with the motors?"

"There ain't nothing wrong with the motors."

"Not when all three of them go out of commission at the same time?"

"I'm telling you, the motors are O.K."

"They stopped, didn't they, so you had to make a forced landing in the fog?"

The pilot stared at him suspiciously. "Say, mister, I ain't doing no more talking. You can get all the information you want from the office in Chicago."

"When will we reach Chicago?"

"My buddy's phoning for a relief plane now. You can wait for that, or we'll send you on by train if you've lost your nerve."

Adams drew Carey to one side. "Let's get out of here while we have the chance," he said. "I've got a hunch that an attempt was made to wreck that plane to get you."

"Me?" asked Carey in astonishment. "Who'd want to kill me?"

"Come on," urged Adams. "We haven't any time to waste talking now. Your name's Henry Jones and you're a salesman for a St. Louis shoe concern, if anyone asks you."

"You haven't gone mad, Bill?"

Adams paid no attention to the question, but hurried his friend toward a road on which passing cars were visible through the thinning fog. They climbed the rail fence bordering it just as a commission house truck loaded with watermelons came along. Adams jumped in front of the truck, waving his arms. The driver slammed on his brakes and slid to a stop.

He glowered at the two men. "Good thing I'm a church member and a dry. Most of the guys drivin' along here would rather kill a prohibition agent than not."

Adams laughed. "We're not prohibition agents. We were passengers in a plane that crashed in a meadow half a mile back

there. We've got to get to the nearest town as soon as we can."

"Plane crashed, eh?" The driver stood up and gazed across the fields. "Anybody hurt?"

"All of us bruised a bit. We were lucky not to hit anything, landing in the fog."

"I'll say you was. Where do you want to go?"

"Any town that has a railroad station."

"I'm runnin' into Toledo. That suit you?"

"That'll do fine."

"All right, one of you can sit here in front with me. The other one'll have to ride with the melons."

"You sit in front," said Adams to Carey. "I've ridden on melons before. I was brought up on a farm."



MORRISON COLLADAY

A Case of Pre-meditation

ADAMS and Carey were graduated from the University of Chicago in the same class ten years before, but their careers had kept them apart since, except for an occasional meeting. Carey was professor of physics at the University and famous for his discovery of

certain methods of energy control. There had been recent newspaper rumors of a revolutionary discovery he had made that was so dangerous in its possibilities that all information about it had been suppressed by the federal government.

When Bill Adams left college he took a job as reporter on the *Chicago Tribune*. He rapidly became the confidant of both gangsters and corporation presidents. He went to Washington as correspondent for his paper and established intimate contacts with statesmen and lobbyists. Finally he severed his connection with the *Tribune* to go abroad on confidential missions for the State Department.

Now with Carey he was on his way from Washington to Chicago after a secret conference with the President of the United States.

* * *

As a Chicago bound train pulled out of the Toledo station two hot and dusty men raced down the platform and boarded the last car. Ten minutes later they were in a drawing-room with curtains down and door locked.

Adams grinned at Carey, who was serious. "Get it off your chest, Henry," he said, "and you'll feel better."

"I feel all right, but I'd like to know why you've been rushing me all over the country on a day as hot as this."

"I told you before—to keep you from being murdered. Maybe you don't think that's important, but the government has uses for you just at present."

"You're crazy, Bill. Who'd want to murder me?"

"Ever hear of the IBPA—the International Business Protective Association?"

"Only what I've read in the papers. Why?"

"Evidently the IBPA has come to the conclusion that you and your ether wave generator are dangerous to their activities. They'll feel safer if you're killed in a plane crash or some other accident."

Carey laughed. "I don't believe the IBPA ever heard of me."

"You're too modest, Henry. The government rather expected an attempt on your life when the news of your trip to Washington leaked out. Sending you back by plane seemed the safest way. Evidently it wasn't as safe as we thought."

"You mean the stopping of the motors of the plane in that fog was deliberate?"

"Just as sure as you're sitting there. The chances against our making a safe landing must have been fifty to one."

Carey shook his head. "It doesn't sound reasonable to me. The pilots wouldn't take a chance like that. They couldn't kill me without killing themselves."

"The pilots didn't have anything to do with stopping the motors."

"How could anyone else stop them?" asked Carey incredulously.

"Look here, Henry," said Adams earnestly, "you've got to take some of the things I'm going to tell you on faith. We're up against a serious proposition. You say you've read things in the papers about the IBPA, but the papers daren't print half they know."

"Why not?"

"Because the IBPA is the most powerful organization in the world today. It's a combination of the old gangsters and professional criminals with all the dissatisfied elements in every country. It preys on business all over the world. A speakeasy bombing in Chicago or a war in China are equally likely to be its doing. No newspaper dare antagonize it."

CAREY laughed. "Maybe a newspaper couldn't, but the government could. You've been a reporter so long, Bill, you've lost all sense of proportion. Why, if an organization got as powerful as that, all the governments in the world would combine to destroy it as a measure of self preservation."

"Correct, Henry, and that's exactly what is happening now. I can't tell you all the details of the plan yet, but your going to Washington was part of it. We've had to move carefully, because we can't tell whom to trust. Police, district attorneys, judges, members of Congress, all belong to the IBPA. It has unlimited wealth. Its spies are everywhere. It's so powerful that most people feel it's safer to be on the side of the IBPA than against it."

"Well, even if this is all true, what has it to do with stopping the motors on our plane today?"

"Everything. The IBPA has the finest laboratories in the world and a very clever staff of scientists and inventors working for it, not only in this country but abroad. It has developed at least two very dangerous secret weapons that the government has learned about. Doubtless there are others."

Carey looked unconvinced. "Why do they need dangerous secret weapons? They're

just blackmailers and racketeers on a big scale, aren't they?"

"Not any more. That's the way they started off, but they've grown so strong that they're ready to precipitate a revolution the first time they have a good excuse. The men back of the IBPA have been getting ready for ten years for a conflict with the armed forces of the government."

"What's the idea? What have they to gain?"

Adams shrugged his shoulders. "Maybe they're tired of being called racketeers and gangsters. Besides, there's a nut at the head of the IBPA who thinks he's destined to be the ruler of the world, or something like that."

"It sounds like a dope dream to me. Sure you're not imagining it, Bill?"

"Listen, Henry. I told you the IBPA has two dangerous weapons that the government knows about. One of them they call the arrestor ray; and among other uses, it paralyzes the ignition systems of all internal combustion engines. That's how they stopped the motors of our plane today."

Carey looked thoughtful. "I suppose that's possible," he said. "I remember there were newspaper reports a few years ago about the trial of some such ray by the German army. I seem to remember the German government denied the whole thing."

"You wouldn't expect them to acknowledge it, would you? Suppose when the next war starts, France sends a fleet of planes to bombard the German cities. The Germans raise a barrage of the rays and the planes fall to the ground. You bet they won't acknowledge it."

"Well," said Carey, "even if the Germans have the secret of paralyzing ignition systems from a distance, it doesn't follow that the IBPA knows it."

"The government has satisfied itself about that. One of the Secret Service men, disguised as a mechanic, joined the IBPA and managed to get reports to headquarters describing this weapon and another one he called a 'detonating ray machine'. Unfortunately, this man disappeared mysteriously about six months ago, or we might know a lot more than we do."

"What's the detonating ray supposed to do?"

"It's a machine which will set off any explosive at a distance of at least ten miles."

"Well, they've got something if they've got that," said Carey. "It puts the government in a nasty hole if your friends the IBPA really want to start a revolution, doesn't it? They could blow the army to bits before it got near enough to fire a shot."

"Washington realizes that. That's why it's moving so carefully. Before you invented your generator, it had only one chance to break up the IBPA. Now of course, it has two."

"What was the first one?"

"Locate the headquarters and workshops of the IBPA and destroy them and all their equipment by a surprise attack."

"Well, that looks comparatively simple. Why don't they do it?"

"Because we don't know where they are. That doesn't seem possible, but it's true."

"It ought to be an easy job for the Secret Service."

"Let me tell you something. Seventeen operatives who have been assigned to that job have mysteriously dropped out of sight, one after the other. What we know is absolutely nothing, except that the IBPA has the two machines I've told you about and is going to try to get control of the government in the near future."

"Perhaps they wanted the government to know that," suggested Carey.

"Maybe they did. Of course, the machines won't be any good against your ether wave generator. You've given the government a fighting chance."

CAREY nodded. "You think the men who control the IBPA have found out about my generator and are trying to get me out of the way?"

"That's it. Your discovery came at a bad time for them. They've got all their plans made to seize the government and set up a dictatorship. They have to prevent the government from using your new machine, if they're to be successful."

"What makes you think they know about

the generator?" asked Carey. "Nothing definite has been published about it."

"I guess they have a pretty good Secret Service of their own. I have a copy of a mimeographed letter that was intercepted in mail addressed to a suspected congressman."

Adams ran over the pages in a wallet. "Here it is." He read aloud: "'What is known as an ether wave generator has been invented by Professor Henry Carey of the University of Chicago. If the claims made for it are true, it is undoubtedly the most dangerous weapon ever constructed. It generates a new kind of energy which blankets or destroys all other forms."

"The theory of the machine is not understood, but apparently all matter in the area reached by the waves disintegrates instantly. It is urgently necessary that additional information as to the construction of this machine be secured without delay."

Carey took the sheet of paper from Adams' hand. He gazed at it thoughtfully.

"You see, Henry," continued Adams, "they're fools if they don't try to get you out of the way. What good will their detonating machines or any other weapons be against your generator?"

"Not much, if we dared use it."

"What's to stop your using it?"

"We're afraid of it. Even the smallest experimental machine is so dangerous that we haven't been able to test it satisfactorily."

Adams stared at him. "What about the big one you built on that forty-ton trailer out at the Naval Station?"

"It's built, but we've never tried it. I hope we'll never have to."

"You mean if you used the generator you might start something you couldn't stop?"

"Something like that. We might—"

CHAPTER II.

A Meeting With the I. B. P. A.

"TICKETS, please," called a voice.

Adams reached over and turned the catch on the door. "All right," he said.

Two men came into the room and closed the door behind them.

"I guess you didn't expect us," said the

older one with a not unpleasant smile. "We figured if we sent in our cards you wouldn't be home."

The speaker was a short, stout man of about forty who resembled rather the pictures of Napoleon. He had dark, restless eyes and a high forehead which retreating hair made higher. The younger man with him looked like a prize fighter and was evidently a bodyguard.

"Hello, Angelino," said Adams, "this is an unexpected honor." He turned to Carey. "This is Angelo Angelino, who is a very important man in the IBPA. I'm not sure he isn't the most important man in the organization."

"Never mind the flowers, Bill," said Angelino. "You ain't sore about us butting in this way?"

"That's a small matter," said Adams, "after trying to bump us off in that plane crash."

Angelino frowned. "Not me. I ain't a damned fool." His manner and speech changed. "Too zealous subordinates. Too much zeal and not enough brains. It is most important to the IBPA that Professor Carey remain alive."

Adams looked puzzled. "I don't get you."

"Poof, it's very simple. We know why Professor Carey went to Washington. We know about the ether wave generator he has invented. We might not have minded if he had met with an accident on the way East, when no one except himself knew the secret of his invention. Now when the War Department knows the secret, it would be very unwise for us to destroy the simplest way of learning it ourselves."

Adams nodded. "I see. You're going to try to force Carey to give you the information the government possesses."

"We never use force unless we have to." Angelino eyed the two men steadily. "Like most people, you misunderstand and underestimate the IBPA. Many of the greatest minds in the world today belong to the organization. Powerful as it already is, it's only at the beginning of its activities. It controls governments now. Before long it will replace them. Inefficient and corrupt democracy will be succeeded by the rule of

the strong for the benefit of the strong. Both you, Professor Carey, and Bill Adams here belong with us."

Carey laughed and Angelino glanced at him questioningly. "The suggestion amuses you, Professor?"

"It does, rather. Of course, all I know about your organization is what I've read in the newspapers. They seem to agree that the IBPA is a gang of racketeers and black-mailers. You acknowledge that it tried to murder Adams and me a few hours ago. Now you calmly ask us to join it. Doesn't that strike you as amusing?"

Angelino smiled. "Perhaps it is. We're apt to fix our eyes on results and ignore the means necessary to attain them. As for the newspapers, we're strong enough so we don't find it necessary to justify ourselves, no matter what they say. Besides, we're more or less grateful to them."

Adams looked at him curiously. "I bet that would surprise them if they knew it."

"I don't know why it should. Two Chicago papers started the IBPA, if they only knew it. Years ago they hired muscle men to beat up each other's newsboys. We found out that a newspaper could get away with murder. A lot of us realized that law was meant for the little fellow. Then prohibition came along and we were stronger than the newspapers. We were making millions, and the police and judges and politicians were waiting with their tongues hanging out for their rake-off."

"You saw that they got it, of course."

"Naturally. Even at the beginning, we never did any fighting, we didn't have to. The papers talk as if we were bloodthirsty—murderers. That's all boloney. We're business men and always have been. Of course, if a guy interferes with us too much, he isn't a good insurance risk."

CAREY leaned forward in his interest. "I still don't see how you got so powerful as you seem to be. You must have some remarkable men in your organization."

"We have, but we could have grown big without them. You see, all we did was to take over the jobs other guys had been doing, and do them better. They didn't

call these other guys racketeers and gangsters, not by a damn sight. They were private detectives and corporation police and deputy sheriffs and strike breakers."

"And you consider you're doing the same work as these other agencies you claim to have displaced?"

"Sure we're doing it and doing it a hell of a lot better than they ever did. The American Bankers' Association used to pay the Burns men for protecting their banks. Now they pay the IBPA and there ain't any bank robberies. The big corporations used to pay the Pinkertons for their strong arm work. Now they pay us. Strikes used to cost a lot of money. Now if a corporation pays its fees it don't have to worry about strikes."

"Suppose the men strike anyhow?" inquired Carey curiously. "I don't suppose you control all the unions?"

"The union officers obey orders. It's not healthy for them not to."

"How far does the system extend?"

Angelino shrugged his shoulders. "Most business men pay for protection and get it. We take care of them and they don't have to do any worrying."

"How about the man who refuses to pay for protection?"

"He soon finds out how bad he needs it. If he isn't a fool, he fixes things up with us."

"Suppose he's stubborn and keeps on fighting you?"

"There aren't many of that kind. They don't bother us much. They don't stay in business long. Have an accident, usually."

"I see."

"Now don't get this wrong," Angelino said earnestly. "It isn't fair to the man who's paying for protection for the other guy to get by without it."

"See here, Angelino," interrupted Adams, "why are you telling us all this? You know I'm still a newspaper man."

"Sure I know that, but you're both big men. That's the reason I can talk to you. I don't have to fool you. I told you the IBPA never fights for a thing it can get any other way. We can use both of you."

"The IBPA is in a position to do more

for you than anyone else could. Wait a minute," he said as Adams started to protest. "I'm not talking about money. For Professor Carey, unlimited resources for whatever scientific research he desires to engage in. For you, Bill, unlimited power and influence in charge of both publicity and propaganda for the IBPA."

Adams flushed angrily, but before he could speak Carey took the situation out of his hands.

"There's no use refusing Mr. Angelino's offer without considering it carefully, Bill," he said. "I want to ask him a few questions." He turned to Angelino. "You don't mind, do you?"

"Shoot, Professor."

"You've been quite frank about the methods of the IBPA. How do you justify them ethically? It wouldn't be any of my business naturally, if you weren't asking me to become associated with you."

"We're practical men," answered Angelino. "We don't believe governments should be run for the benefit of the weak. Justice, liberty, right and wrong we believe are just words. Life is a struggle and the rewards go to the strong and ruthless. That's our philosophy in a nutshell. It's the philosophy all strong men live by, no matter what they profess."

"I understand," said Carey. "You said something about the IBPA actually taking over the government of this country. Did you mean that seriously?"

"Certainly. The IBPA is really the secret government of the United States now. We're going to kick the stuffed shirts out. It won't be long."

"You mean you're going to start a revolution?"

"It won't be important enough to call a revolution," Angelino said. "We give the word and the presidency, congress and the courts are abolished. The IBPA takes over the country and runs it on a business basis."

IT occurred to Carey that the man was insane and the thought must have shown in his expression.

Angelino shook his head. "I'm not crazy. It won't be much of a change. Most govern-

ment officials are figureheads now. We tell them what to do and they do it."

"It's going to be a pretty big job, isn't it?" asked Carey. "There's the army and navy. I don't believe you control them. Then the hundred million or so people who live outside the cities—"

Angelino waved his hand indifferently. "We're ready for them all. We can wipe the army and navy out of existence in an hour if we want to. The hundred million people you're talking about won't resist long. What do you suppose our laboratories and workshops have been doing for the past ten years? Besides, most people will probably be glad to have us take over the government."

Adams who had been listening, laughed at this point. "What makes you think they'll be glad?" he asked sarcastically.

"Because the average man is pretty level headed. He'll find out when we start out to do anything we get results. We'll abolish crime. There won't be any police forces or prisons. I guess that sounds funny to you, but we won't need them. Things will be organized. Business will contribute to the government just as it does now to us. There won't be any room for criminals. We'll call them traitors and—" he shrugged his shoulders—"and exterminate them."

"Suppose I should publish your plans, Angelino," said Adams.

"You won't if you become one of us."

"And if I turn your offer down?"

"You won't have the opportunity to publish them."

"I see. Carey and I either join the IBPA or else—"

Angelino smiled deprecatingly. "You don't have to worry, Bill. You and the Professor will be our guests for, say, a couple of weeks. After that it won't make any difference what you publish."

Adams noticed that Angelino's gorilla seemed bored by this long conversation. He was standing with his back to the door, his gaze fixed vacantly on the landscape flying by the windows. Angelino was sitting facing Carey, both men intensely interested in the discussion. Adams was lounging in the wash room doorway.

Bill had been amateur boxing champion at the university and he had kept himself in fair condition. He decided to take a chance, though he was unarmed and the gorilla's forty-five automatic was visible in a shoulder holster. Suddenly he leaped forward as the train swung around a curve. The gorilla's head smashed back against the door from the force of the blow on his chin, and he sank slowly to the floor.

Adams snatched the forty-five from its holster and whirled toward Angelino, who had turned at the sound of the blow.

"Up with them!" snapped Adams. Then he grinned. "I always said you guys weren't so hot with the rods. That's why you use a machine gun to get a man. Keep 'em up!" he ordered sharply as Angelino started to lower his hands. "Come over here and take this gun, Henry."

CHAPTER III.

In Hiding

C ALEB PAXTON lived in a French chateau which stood in the middle of a large estate at Winnetka. There was a private dock and lying off shore, a yacht big enough to cross the ocean.

"Do you suppose he'll see us?" Carey asked Adams as the two men stepped out of a taxicab at the door.

"He's been waiting for me," Adams explained. "I was to report to him as soon as we reached Chicago."

A butler who evidently recognized Adams ushered the two men into a reception room. "I'll tell Mr. Paxton you're here."

A moment later a worried-looking man of about sixty hurried into the room. He gave an exclamation of relief when he saw Adams, and waved the butler out, closing the door behind him.

"Are you all right?" he asked. "I've been trying to locate you for hours."

"Gilt edge," Adams assured him. "This is Professor Carey, Mr. Paxton."

"Mighty glad to see you too, Carey," said Paxton, offering his hand. "The State Department was on the phone only five min-

utes ago, trying to get information about you."

"What's all the excitement?" asked Adams. "We've had plenty of adventures, but nobody could have known about them already."

"You think so, do you? All the papers had scare heads about the plane crash. First they had you and Carey killed. Then this was denied by the transport company. They insisted that you weren't injured, either of you, but that you'd mysteriously disappeared. I phoned the police departments of all the nearby towns, but no one had seen you."

"Now that just shows the efficiency of the IBPA," said Adams. "We got a truck to give us a lift into Toledo right after the crash, and we caught the Chicago train as it was pulling out. The police didn't know where we were, but the IBPA did. Angelino got on the same train."

"Angelino!" exclaimed Paxton, frowning. "You've seen him?"

"We not only saw him, we had a long talk with him," said Adams. "As a matter of fact, he told us all about the plans of the IBPA. They're going to take forcible possession of the national government in the course of the next few weeks."

"You're joking?"

"I was never more serious in my life. Angelino invited us to join the IBPA. He said if we didn't he'd kidnap us and keep us locked up until the happy event took place."

"But you got away from him!"

"We're here, aren't we? We put something over on Angelino this time."

Paxton was pacing nervously up and down the floor. "Tell me exactly what happened. What did Angelino tell you? We'll have to decide what's to be done."

Adams began, "Well, after those rumors got out about Carey's ether wave generator, we knew we'd have to get him to Washington secretly if we didn't want him murdered before he got there. We got him there all right. We thought he wouldn't be in much danger on the return trip, because the IBPA would realize that killing him wasn't going to suppress knowledge of the generator."

"We allowed the information to leak out that the government was in possession of

full plans and specifications for the machine. Still, it wasn't worthwhile taking unnecessary risks, and we decided the safest way for Carey to return to Chicago was by plane."

"It doesn't seem to have been particularly safe," Paxton remarked.

"That's because the IBPA used one of their ray machines on us. They paralyzed the ignition of the motors on our plane while it was flying in a heavy fog. We landed safely, but it was a fifty-to-one shot we wouldn't."

PAXTON frowned. "I've never believed any of those ray machine romances. The motors of your machine stopped and you're just guessing why."

"It's more than a guess," said Adams. "Remember, it was a tri-motored plane. All three of the motors stopped at once, though the pilots declared they were in perfect condition before and after. Then Angelino admitted that an attempt had been made to kill us. He said it was the work of 'over-zealous subordinates—men with too much zeal and too little brains.'"

"Well—never mind about that now. Tell me what happened after you landed."

"I figured they'd try some other way of killing Carey as long as the first plan failed. I thought I'd better get him to Chicago as quickly as possible. There was an automobile road a half mile from where we crashed, and we got a ride on a truck going into Toledo. We jumped a Chicago train just as it was pulling out."

"I can't see how Angelino got on your track," said Paxton.

"Neither do I. I thought we'd made a clean getaway. It was about an hour after we'd left Toledo, I guess, when Angelino shoved into our drawing-room. He had one of his gorillas with him."

"Did he recognize you?"

"Of course. I've known him ever since I was a reporter on the Trib."

"What did he say he wanted?"

"He invited Cary and me to join the IBPA. He spent an hour telling us all about the organization and what it was going to do."

"I suppose that suggestion made a hit with you."

Adams grinned. "I started to tell him what I thought, but Carey stopped me. Instead of flatly refusing to join, he temporized. I realize now that was the safest thing to do."

"How did you get rid of him finally? You never used to carry a gun."

"I don't yet. Neither does Carey. You remember I used to be a pretty good boxer. I don't think either Angelino or the gorilla had any idea we'd try to get away. I saw the gorilla wasn't watching me, and I waited till the train gave a lurch. Then I jumped him—knocked him out and grabbed his automatic. The rest was easy. We tied both of them up and gagged them and put them away in the washroom. We got off the train at Gary just as it was leaving the station, took the interurban to Chicago and changed to a taxi as soon as we saw one. Chicago didn't seem exactly a healthy place for either of us just now, so we thought we'd visit you for a while in Winnetka."

The Menace

PAXTON frowned in thought. "You boys will both have to keep out of sight, that's one thing sure," he said. "Your lives won't be worth a plugged nickel in Chicago."

"Still, I've got to stick around where I can be in touch with things," said Adams. "It's more important now than ever. The IBPA is going to make some move almost at once. I'm convinced of that from what Angelino said. Aren't you, Henry?"

Carey nodded. "It sounded that way."

"That means we'll have to advance our attack and get in ahead of them."

"That's easier said than done," Paxton objected. "Did you get any definite instructions in Washington?"

"Sure. Simple enough. Find the headquarters of the IBPA and destroy them. The State Department is sure the nerve center of the organization is somewhere near Chicago. If we can locate it and make an unexpected attack, we'll have the fight pretty well won."

"I don't believe finding the headquarters is as important as getting rid of Angelino," said Paxton. "He's the brains of the whole outfit. The best thing to do is to arrest him and fix it so somebody shoots him accidentally."

"That's a brilliant idea," replied Adams. "One of this lieutenants will step into his shoes and we'll be just where we are now, except we'll have lost the sympathy of the public."

"How are we going to be any better off if we discover the IBPA headquarters?"

"We'll make a sudden attack and seize the arrestor ray machines and the detonators. They'll be fairly helpless if we do that."

Paxton shook his head. "I don't take any stock in those super-scientific gimmicks. I've been saying all along the thing to do is to get the President to declare martial law. The gangsters won't last long against the army."

"You're wrong about that, Paxton. The IBPA can destroy any troops we send against it."

"You mean to say that a bunch of racketeers can whip the United States army? You're crazy, Adams!"

"I'm not the one who's crazy. Angelino could destroy the whole army before it got within ten miles of him."

"How?"

"That's one of his secrets. All we know positively is that he can do it. He can set off any explosive at a distance by a radio wave tuned to the right frequency to detonate that particular explosive."

"Nonsense!" exclaimed Paxton. "It isn't possible. Why, if that was true he could set off the ammunition in an arsenal, or blow soldiers to pieces with their own cartridges."

Adams nodded. "That's just it. Washington has a full report on what the machine does, but not how it works."

Paxton sank into a chair. "If they can do that, what's the use of fighting them? What chance have we got?"

"That's where Carey comes in. That's the reason we took him to Washington and why he's so important to the IBPA. His

ether wave generator makes all their machines useless."

Paxton turned to Carey. "Is that true?"

"Yes, if we dare use it."

"Look here, Professor," said Paxton. "Tell me candidly what you think of the situation we're up against. You've seen Angelino and had a chance to size him up, and you've been listening to our friend Adams here."

Carey hesitated. "I'm so new to this enterprise that I hardly feel I should do any criticizing."

"Go ahead and criticize," said Paxton. "We want you to, don't we, Adams?"

"Sure," nodded Adams. "You can't hurt our feelings."

"It seems to me," began Carey thoughtfully, "that there must be something seriously wrong with the Secret Service and your organization if you haven't been able to find out where the IBPA headquarters are. After all, factories and laboratories can't be hidden very well if they're at all extensive."

"THAT'S what we thought when we started," said Adams, "but we haven't been able to discover them."

"You think you can trust all the men who are working with you in this fight on the IBPA?"

"We think so, but of course we can't be sure. That's why no one except certain officials in Washington are familiar with all that's being done. The IBPA draws its members from all classes of society. As far as we can tell, it's more like the old Sicilian Mafia than any other organization which has ever existed. I have no doubt that there are governors and high federal officials among its members. Certainly it controls the big city police authorities and criminal courts. That's what makes our work so difficult and dangerous."

"Maybe we've bitten off more than we can chew," said Paxton.

"Not if we don't lose our nerve," answered Adams. "If we succeed in locating and destroying the IBPA headquarters and then arrest Angelino and his chief lieutenants, these other adherents will desert like the rats they are. They'll tumble over them-

selves to line up on the side of law and order."

"How do you know the IBPA hasn't spies watching all of you?" asked Carey.

"We don't know it. They probably have. We can be reasonably sure they haven't discovered yet what we're planning to do, or we wouldn't have been left undisturbed."

Carey turned to Paxton. "I hope you can trust all your servants, Mr. Paxton."

"You needn't worry about that," answered Paxton a little pompously. "I demand loyalty from the people who work for me, and I get it. Of course, I pay for it," he added as an afterthought.

Carey nodded. "Still I imagine the IBPA would pay more if it suspected your present activities."

Paxton looked startled. "I guess that's right. I hadn't thought about that particular danger. Perhaps we'd better go out to my yacht to finish our discussion. It will be the best place for Adams to hide until the showdown, anyhow."

An hour later the three men were seated comfortably around a table in the luxurious cabin of the *Wild Goose*.

"It seems to me," Carey was saying, "that you fellows fighting the IBPA are wasting a lot of time. First thing you know, Angelino will get the jump on you. If the men back of the IBPA actually get possession of the government it's going to be hard to dislodge them, with public sentiment as indifferent as it is."

"If you'll show us how to hurry things we'll do it," answered Adams a little impatiently. "What can we do? We might arrest Angelino and a few of his lieutenants, but we couldn't even keep them locked up."

"Tell me one thing," said Carey. "Who's going to do the actual fighting in this war you're planning? Where are your men?"

"You needn't worry about that," replied Adams. "We have them in every city in the country, ready for action on receipt of orders. Here in Chicago we have enough of them to take possession of the city, even if we find the IBPA controls the entire police force."

"Who's supposed to give the order?"

"I am, if I'm alive. If anything happens

to me in the meantime, there are six other men, any one of whom can start things moving."

"AND you're waiting until you locate the IBPA headquarters. That's it, is it?"

"That's it. Until we locate and capture their headquarters we can't safely make a move."

Carey turned to Paxton. "I'd like you to run me back to the city in the yacht, if you don't mind. You can land me at the Chicago Yacht Club."

The two men stared at him in astonishment. "Getting ready to commit suicide?" asked Adams.

"Not exactly. I have an idea I can locate the IBPA headquarters and workshops for you."

"You're crazy. What chance have you got, after what happened this afternoon? You'll be shot down on sight."

"I don't believe that, Bill. You remember, I didn't refuse Angelino's offer. I helped tie him up, but you had a gun. I think I can make him believe I was afraid to do anything else."

Adams shook his head. "It's too dangerous. If he ever suspects you're double-crossing him, you'll have a nasty finish."

"All the same, it's worth trying. When we reach the city I'll go to my house. It won't take Angelino long to find out I'm there. He wants that ether wave generator of mine. As he said this afternoon, it wouldn't be convenient for me to be dead as long as the government has the secret and the IBPA hasn't. While I'm alive he'll believe there's a chance of learning it."

"Suppose Angelino does tackle you?" asked Paxton. "What do you intend to do?"

"Accept his offer to join the IBPA. That won't surprise him. He'll think it's the sensible thing to do. If he trusts me he'll take me to the IBPA laboratories and put me to work making an ether wave generator for him."

"What good is that going to do us? If he takes you there, you can bet he won't

trust you enough to run the risk of your getting away."

"If I get to the laboratories, I'll manage the rest somehow."

"But how?" persisted Adams.

"I can't tell till I find what I'm up against."

"You won't have a chance. They'll watch you like a hawk. You couldn't get a message out in a thousand years."

"Look here, Bill, I'm not going to tell anybody my plans, but if I reach the IBPA headquarters, I'll get a message to you within twenty-four hours."

"If he feels that way about it, I think we ought to let him use his own judgment," Paxton said to Adams.

"Go ahead then," said Adams, throwing up his hands, "but I think it's a damn fool stunt."

CHAPTER IV.

Carey Joins

CAREY'S living quarters were on the second floor of a large house near the university. The ground floor and basement had been converted into workshops and laboratories. A negro cook and a maid took care of the living quarters. The laboratory was in charge of a middle aged mechanical genius named Mike Kelly, who had assisted Carey for years and knew more about his work than anyone except Carey himself.

Carey left the *Wild Goose* at the Yacht Club and reached the house about midnight. When the two servants appeared in the morning he dismissed them for the day. He then gave Mike certain instructions and sent him away, much against his will.

Carey busied himself in the laboratory while he waited. Shortly after ten o'clock the telephone rang and he heard the voice he had been expecting.

"This is Angelino, Professor."

"Yes, I recognized your voice."

"Did you expect to hear from me?"

"I did rather, after what you said in the train yesterday."

"Your friend Adams is a smart guy."

"I was sorry about that. Still, you didn't

handle him very diplomatically. Threats don't do much good with a fellow like Adams."

"To hell with him. What about you? Are you going to join us?"

"Before I decide, I'd like to talk things over with you. I want to find out exactly what I'll have to do. When can I see you?"

"I'll be at your place in twenty minutes."

In rather less time a large black limousine stopped before Carey's door and five men got out, one of whom was Angelino. Two of the men remained outside. The other two accompanied Angelino into the house and made a hurried search from cellar to roof while he remained in the vestibule.

"You mustn't mind them," he said to Carey. "A good many guys would like to bump me off, so we don't take any chances. Let's get down to business."

"Suppose we go into the laboratory," suggested Carey.

"How would fifty thousand a year strike you?" asked Angelino when they were alone. "I guess you're getting about ten now."

"How do I earn the fifty thousand?"

"Well, this ain't any charity stunt. We'll get our money's worth. You start off building some of your ether wave generators for us."

Carey nodded. "I thought that's what you'd want me to do. It will take time, of course."

"Sure, we know that. It's O. K. with us. We've got things all planned to take over the government and we don't want to do any more fighting than we have to."

"The government has one of the ether wave generators, you know."

"What good will it do them if they haven't got you? You're the only guy knows how to work it, aren't you?"

Carey shrugged his shoulders. "I know more about it than anyone else, of course."

Angelino's smile was grim. "I could see yesterday you weren't anybody's fool, Carey. You see our position. We couldn't let the government use you. If you didn't come with us we had to bump you off. Some of the boys decided bumping you off was the best way anyhow, and you know

what happened to your plane. I had an idea you'd be more useful to us alive. That's why I made the proposition I did on the train yesterday.

"When you got away with Adams I didn't believe I could do any more to save you, and I was sorry. I like you, Professor. Then we found you'd come back to your house. I thought I'd give you a last chance. That's why I phoned."

Carey nodded. "I knew that was about the situation. I prefer staying alive, of course, so it didn't take me long to decide. What do we do now?"

Angelino looked at him admiringly. "Say, Carey, I meant it when I said I like you. Lots of guys have brains and lots of 'em have guts, but they generally don't come in the same package. Let's get going."

CAREY thought that the building to which he was taken was on Quincy Street, but he was not sure. The car stopped at the entrance and he was hustled down a flight of stairs to the basement. At the street end was an entrance into a tunnel. He stared in surprise as a train sped by.

"Freight subways," said Angelino, noticing his wonder. "I bet you never knew Chicago had any subways."

"I suppose I must have known, but I certainly never saw them before. How extensive are they?"

"Sixty-five miles of tunnels. We've got a hundred and twenty locomotives and three thousand cars."

"What do you mean by 'we'? The IBPA?"

"Sure. We run 'em. They're just made to order for us."

A train stopped and Angelino with Carey and the guards climbed in one of the cars. Fifteen minutes later they were at the entrance of another basement much like the one from which they had started. Angelino stepped into an elevator and motioned Carey to follow him.

"You boys needn't come any further," he said to the guards.

When the elevator started, Carey was sur-

prised to find they were descending instead of going up.

"There seems to be a lot of Chicago I don't know anything about," he said.

"You've got plenty of company. We're pretty careful who gets a chance to see what I'm going to show you."

The elevator stopped and Angelino opened a door into a great underground warehouse.

"A natural cavern?" asked Carey.

"No such luck. We had to dig it. Some job, eh?"

"I should say so!"

"Wait till you see our laboratories and workshops."

"Are they down here?" asked Carey.

"Ten miles away."

"I should think that would be inconvenient for you."

"Not so bad. I'll show you how we get to them."

He led the way among the piles of freight. There were great machines crated for shipment. Others were mounted on trucks, evidently to be wheeled into position for use. All kinds of goods were stacked nearly to the roof.

At the far end of the chamber were railroad tracks leading into a tunnel. Angelino telephoned and a few minutes later an electric locomotive slid up to the platform.

"Where are we going?" Carey asked.

"Spring River. Ever been there?"

"I don't believe so."

"It's a little town ten miles from the Loop. It had a famous brewery once. Now the brewery's the biggest ginger ale works in the country." Angelino looked at Carey quizzically.

"You mean you're using the old brewery buildings for your laboratories and workshops?"

"That's it. We're making plenty of dough out of the ginger ale racket, and it covers up our real activities."

"Mighty clever," conceded Carey. "Does this subway run all the way?"

"Sure. Lands you in the sub-basement of the main building."

"You do things on a big scale, don't you—digging a subway ten miles long, and things like that."

Angelino became serious. "You don't realize yet, Carey, that the IBPA is really a great revolutionary organization. The racketeering part was for two purposes—to get funds and to conceal our real objects. We've fooled everybody, with the help of the newspapers. We've fooled 'em so well that even you don't believe the truth now when I tell you."

"Well, there haven't been any revolutions for so long that they seem a little old-fashioned. I doubt whether you can get away with it."

"Mussolini got away with it in Italy, didn't he? We're ten times as powerful as he was when he started, and we have weapons the world has never even imagined."

Carey Plots

CAREY shook his head doubtfully. "Maybe you're right, but nineteen-forty isn't nineteen-twenty, and the United States isn't Italy. When Mussolini got possession of Rome, Italy belonged to the Fascists. You might control Washington and New York and Chicago, and you wouldn't have made a dent in America."

"Don't worry about that. It's all arranged. We'll take possession of every city in the country on the morning of September third. See, I'm so sure of our success that I'm telling you our plans."

"Not much danger of my giving them away, if you're going to keep me out there r Spring River."

"Only until September third, Professor. After that you can live in your own house again if you want to."

"What's the idea of this revolution of yours, anyway? You're making all the money there is, and you have plenty of power now."

Angelino frowned. "Money isn't everything. Look at me, Professor. Who do I look like?"

Carey gazed at him steadily for a moment. "You look a good deal like some of the pictures of Napoleon."

Angelino nodded in satisfaction. "Do

you happen to believe in reincarnation, Professor?"

"I can't say I do."

"Suppose I was the reincarnation of Napoleon and was destined to conquer the world?"

"Do you believe that?" asked Carey.

Angelino shrugged his shoulders without replying as the train came to a stop.

* * *

Carey was seated with Angelino in the elaborately equipped office of the ginger ale works.

"Well, what do you think of the IBPA now?" asked Angelino.

"What can I think? You have the finest laboratories and workshops I've ever seen."

"How about our fighting machines?"

"I can't tell much about them till I see them work."

"You saw one of them stop the engines of your plane yesterday. All we have to do is start it and the ignition system of every internal combustion engine within a radius of twenty miles quits cold."

"The government knows you've got that one," said Carey. "Adams described it to me. He spoke about the detonating ray machines, so the government knows about them too. I don't see how the machines are going to do you much good, with the government prepared for them. You're going to have heavy odds against you."

"Ah, but there's a third machine which the government doesn't know about. With it we can absolutely destroy any body of men or place that resists us. The boys call it the 'devil feeder'."

"What does it do?" asked Carey curiously.

Angelino shook his head. "We're not telling about that one till after September third."

"Suppose the government discovers that this place is your headquarters. They could destroy your machines before you had a chance to use them."

"Not a chance," declared Angelino confidently, "unless they had your ether wave generator." He looked at his watch. "I'll have to leave you. You'll sleep in my apartment on the top floor of the main

building. Come up and I'll introduce you to a couple of the boys who'll keep you company."

The apartment was luxuriously furnished. A negro cook had dinner ready when the two men stepped out of the automatic elevator. Angelino introduced Carey to Jim and Ziggy, who appeared to be typical gorillas.

"The boys will take good care of you, Professor," he said. "I'll see you in the morning."

Jim and Ziggy were not inclined to talk and dinner was eaten in silence. After they had finished, Carey read a couple of Chicago newspapers while the gorillas played pinochle. Finally Carey said, "I guess I'll go to bed, if you'll show me where I sleep."

"Sure," said Ziggy. "The boss said you was to have his room. Right through this door."

"Where are you going to sleep?" asked Carey.

"Us? We ain't goin' to bed till the boss gets back."

ANGELINO'S bedroom was separated from the living room by a hall which ran through the middle of the suite. Its four windows were unbarred, but a glance showed there was no way of reaching the ground. Carey undressed and put out the light. If anyone looked into the room he was in bed, apparently asleep. In reality he was wide awake and paying close attention to the time shown on the illuminated dial of his wrist watch.

At five minutes to eleven he got up and softly opened the bedroom door. There was still a light in the living room. He examined his door. It had a lock but the key was missing. He carefully closed it and propped a chair under the knob. Then he took from an inside pocket in his coat an oblong, leather-covered case about the size of a pocket camera.

He stood this case upright on a small table beside the bed. From the top he drew two rods, which connected by a wire to form a miniature aerial. He lowered the front of the case and took out a tiny telephone receiver. Now he glanced at his

watch again and saw the hands stood exactly at eleven. He threw a switch and called softly, "Hello!"

A voice instantly answered, "Hello."

"That you, Mike?" asked Carey.

"It's me. I've been waiting at the laboratory. You all right, Professor?"

"I'm all right. I don't know how long I'll be able to talk to you. You'd better write down what I tell you."

"O. K., Professor."

"Got your pencil and paper?"

"I've got 'em."

"As soon as I finish talking I want you to hunt up William Adams. He's probably on board Caleb Paxton's yacht, the *Wild Goose*, at the Chicago Yacht Club. If he isn't there, find him. Understand?"

"I'm to hunt up William Adams. If he isn't on Mr. Caleb Paxton's yacht, the *Wild Goose*, I've got to find him anyway."

"That's right. Now when you see Adams, tell him I'm at the headquarters of the IBPA. They're in the old brewery at Spring River, which is now used as a ginger ale plant. The main building has a flat roof. I'm in an apartment at the northwest corner of the top story. Got all that down?"

"Yes, sir."

"Tell Adams I have information of the greatest importance which must reach Washington immediately. What I want him to do is to have one of the Diesel-motored army autogiros land on the brewery roof, just about dark tomorrow night. Don't forget, it must have Diesel motors. Adams will understand why. There's a trap door to the roof from a closet in the bedroom where I sleep. If everything goes right, I'll be on the roof when the autogiro lands. Got all that?"

"I've got it."

"Tell Adams to have the pilot fly over Spring River before dark, so he'll know what he's doing. He can't miss the brewery, it's the only big building in town. After he locates it he'll have to go away and fly back, say at eight o'clock. I won't be able to make it before that time, even if everything goes right. There ought to be enough light at eight o'clock for him to see

to land on the roof. The building is red brick and it's about two blocks long. He'll have to be careful to dodge the smoke stacks. They're at the south end. Got all that down, Mike?"

"Yes, Professor.

"Now read it over to yourself and see if there's anything you don't understand. If there is, ask me now, because I won't talk to you again unless something interferes with the plans for tomorrow night. By the way, tell Adams the message is from Henry, so he'll know it isn't one of Angelino's tricks."

"Hello, Professor," said Mike, five minutes later. "There's one thing you didn't tell me. Suppose I can't find Mr. Adams in time?"

"You start off now, Mike, and hunt for him. If you don't locate him by noon tomorrow, give the message to Caleb Paxton."

CHAPTER V.

The War Conference

THE following morning the *Wild Goose* was leisurely steaming north on Lake Michigan. Below in the cabin was a worried looking group of men who had come aboard one by one the night before while the yacht was anchored off the Chicago Yacht Club. Adams was speaking.

"I didn't care to assume the responsibility of not bringing you gentlemen together, in view of the seriousness of the situation. When we planned the campaign against the IBPA, it seemed best that no meeting such as this be held. However, the happenings of the past few days indicate that a policy of delay and inaction would be far more dangerous than meeting the situation boldly."

Jarvis, the president of the Dearborn National Bank, rose to his feet. He looked around the table slowly and then spoke. "Of course we all know one another, but this is our first knowledge that we are associated in a war on the greatest menace that has ever threatened America. I congratulate you gentlemen in having the

courage to fight a most dangerous enemy.

"I'm sure we are all satisfied that Mr. Adams did the proper thing in bringing us together, in spite of whatever risk it entailed. I'm glad you gentlemen are no longer numbers to me. I think we can trust one another. I'm glad to have you know me as Seymour Jarvis instead of Number Seven."

There was a scattered burst of applause. Peabody, the Chairman of the Board of Consolidated Gas, tapped irritably on the table with his gold pencil.

"What are these serious happenings of the past few days that Adams talks about?" he wanted to know. "He hasn't told us anything that we didn't know before. I for one object to being kept in the dark."

"You won't be kept in the dark, Mr. Peabody," said Adams. "I've been waiting, hoping to have certain additional information to lay before you. You all know of the accident to the plane in which Professor Carey and I were on our way from Washington?"

The men around the table nodded.

"Most of you don't know that the supposed accident was a deliberate attempt on the part of the IBPA to kill Carey." Adams related the events which followed the forced landing, including the interview with Angelino. "It means," he concluded, "submission to gangster rule, or war. Our only chance is to take the IBPA by surprise and destroy it before it starts its revolution. We haven't much time."

He sat down. There was a moment's silence as the men looked at one another uncertainly.

"Do you think the IBPA has any knowledge of our plans?" asked Jarvis.

Adams laughed grimly. "If it had, none of you would be here this afternoon. You'd be in a better world. Playing harps, maybe."

"I'd sure like to know of this machine of Professor Carey's," said Jarvis.

"So would I," interjected Peabody. "Where is Carey?"

"Professor Carey is making a very dangerous attempt to locate the headquarters

of the IBPA. I told him it was almost sure death, but he—"

Adams was interrupted by a knock at the cabin door. Paxton strode over and unlocked it. Captain Baldwin was standing outside.

"What is it?" asked Paxton testily.

"There's a man in a speedboat just overhauled us," said the captain. "He says he's got to see Mr. Adams. I thought I'd better tell you."

"What's that?" Paxton frowned. "Are you sure he asked for Adams?"

"That's what he said. He said it was a matter of life and death."

PAXTON turned to Adams. "What do you make of it, Bill? How could anybody find out you were aboard?"

"Search me. What kind of looking fellow is he, Captain? Look like a reporter?"

Captain Baldwin shook his head. "Too old, I'd say. He's got a beard. I never saw a reporter with a beard."

"I don't think we ought to let anyone see us," interrupted Jarvis. "It might make them suspicious."

"Sure," said Adams. "If they saw this bunch gathered together they'd suspect you were getting ready to buy control of U. S. Steel or Standard Oil."

"I guess Jarvis is right though, Bill," said Paxton. "It's better to be careful."

Adams turned to Captain Baldwin. "This fellow just said he wanted to see me? He didn't say anything else?"

"He said he had a message from Henry, I believe."

"What's that?" exclaimed Paxton and Adams together.

Captain Baldwin looked surprised. "He said he had a message from Henry, or Henry had sent him—something like that."

"Lie to," ordered Paxton, "and let him come aboard."

"What's it all about?" asked Peabody querulously after Captain Baldwin had hurried away. "Who's Henry?"

"Professor Henry Carey. It probably means he has succeeded."

"More likely to be a trick of the IBPA,"

growled Jarvis. "Angelino's after you, Adams. You better not let that fellow aboard."

"That's all right, Jarvis," said Paxton. "We can manage him, whoever he is. We won't bring him here. You keep the cabin door closed and Adams and I will see him in my stateroom forward. He won't even know any of you are aboard."

"Well, it's up to you," Jarvis grumbled. "But I think you're running a needless risk."

The newcomer was a serious-looking man of about fifty.

"You Mr. Adams?" he asked.

"That's my name. What do you want?"

"I got to see you private."

"You can say anything you want to before Mr. Paxton. He's the owner of the *Wild Goose*."

The man gazed keenly at Paxton. Then he nodded. "My name's Kelly," he began. "I'm Professor Carey's assistant in the laboratory. I make all of his apparatus for him."

"Where is Carey now?" demanded Adams. "You've heard from him?"

Kelly nodded. "Eleven o'clock last night. I been hunting for you ever since."

"What did he say?"

"He said to tell you he was at headquarters of the IBPA."

"How did he get the message to you?" asked Adams suspiciously.

"He's got a micro-wireless telephone with him."

"What's that?" asked Paxton.

"It's a wireless phone that works on a short wave length, less than two inches. The set's so small you can carry it in your pocket. It's only good about thirty miles."

"That's something new to me," said Adams.

"It's pretty new," Kelly admitted. "Professor Carey invented it. There ain't many been made yet."

"What did Carey say," demanded Adams. "Let's have it."

Kelly took a paper from his pocket. "He had me write it all down so there wouldn't be no mistakes."

For the Strong

CAREY slept soundly and woke about seven o'clock. He found Angelino eating breakfast alone. He looked around for the gorillas, but they had disappeared.

"Where are my two friends this morning?" he asked.

"Oh, them," replied Angelino indifferently. "You won't need 'em during the day while you're working in the laboratory." He gazed at Carey keenly. "I don't know that you need them anyway. Give me your word you won't try to leave here until after the third, and you won't see them again."

Carey laughed. "Better not trust me, Angelino. I might be fooling you."

Angelino, frowning in thought, paid no attention to the remark. "As soon as you finish breakfast, we'll go down to the shops and get the men started on your ether wave generator. How long will it take to complete one?"

"It depends on the kind of workmen you have and how soon you can get the materials we need. Of course, I'll have to make a new set of drawings."

"Where's the set you used making the first machine?"

"In the War Department at Washington. That's the only set in existence. There was only one set of blueprints made from the tracings. These were each sent to a different manufacturer so no one would learn too much about the machine."

"They got the blueprints now?"

Carey shook his head. "They were returned to the War Department."

"What happened to the machine you built? You couldn't take that to Washington with you."

"The government took possession of it last week. That's all I know."

"Don't you know where it is now?" asked Angelino suspiciously.

"Not any more than you do. Last week a couple of Secret Service men came to the laboratory with a bunch of workmen and trucks. They said they had orders from Washington to take the machine to the Great Lakes Naval Station."

"What did you do?"

"What could I do? I dismantled it so they could get it up the stairs from the basement. They loaded it on the trucks and took it away. The next day I was ordered to go to Washington and take all the plans of the generator with me."

"What happened when you got to Washington?"

"Half a dozen engineers got me in a room and questioned me for hours. They acted as if I were trying to put something over on them. I told them all I knew about the theory and construction of the generator, and gave them the plans."

"Was that all?"

Carey nodded. "They sent me back to Chicago by plane and some of your gorillas tried to keep me from getting there."

"It looks to me as if you got a raw deal," said Angelino thoughtfully.

"It's a good thing, perhaps. If I hadn't been sore I wouldn't have taken your proposition."

"Well, you'll have a chance to get back at the Washington bunch."

* * *

Carey was able to satisfy himself about a matter that had puzzled him the day before. To invent and build the machines he had seen would, he knew, take a scientific and engineering staff of extraordinary skill a long period of time. Men capable of such achievements have at least a national reputation, and their activities are well known. Now Carey met these mysterious scientists. He found them rather taciturn men who had been trained at the best technical schools aboard and of whom he had never heard.

"How do they live when they're not working?" Carey asked Angelino. "You can't keep them locked up as you do me."

"They live in Spring River. All the employees of the ginger ale plant live there."

"I should think you'd be afraid some of them might talk."

"They're not the talking kind. Most of them have been in trouble in their own countries. We got them away and brought them here. They all share in the profits of the IBPA. They'll all be part of the

governing body of this country after September third."

Carey looked at Angelino in frank wonder. "I'm blessed if I understand how you hold your gang together. You started out as a racketeer, whatever you are now. Most people still regard you as a gangster. They'd laugh at the idea of your being a revolutionist. Yet even taking you at your own valuation, you're going to set up a dictatorship. These followers of yours strike me as being communists. I suppose you might be called a fascist. You ought to be fighting on opposite sides.

Angelino waved the objection aside. "Mussolini, Stalin, Hitler, me—we're all working for the same end, government by the strong for the benefit of the strong. The little men, the workers, we take care of, of course. It's to our advantage to do that. These little men will be better off after September third than they are now."

An Autogiro to the Rescue

CAREY got to work at a drawing board and apparently made rapid progress. Angelino visited him a number of times during the day. When evening came he accompanied Carey to the apartment on the top floor and turned him over to Jim and Ziggsy who were waiting there.

"I've got to be away tonight," said Angelino half apologetically, "and some of the boys will be better satisfied if Jim and Ziggsy stay with you."

"That's all right," said Carey. "They won't bother me. Glad to have them."

The three men were eating dinner when Carey heard the sound of a plane overhead. He glanced at his watch and saw it was seven-thirty.

He hurried through the rest of the meal and started to leave the table. Ziggsy, who had been drinking, caught hold of his arm.

"You don't wanta go to bed yet, Perfessor. Let's have a little game of some kind."

"I'm afraid I don't know any games," replied Carey.

"We'll teach you some, won't we, Jim? We'll teach the Perfessor to play poker."

"I'm tired," Carey objected. "Had a hard day. I think I won't play."

"Say, Perfessor, you went to bed before eight o'clock last night and here you're goin' to do it again tonight. That ain't no way for a white man to act when he's with his friends. We're friends, ain't we, Perfessor?"

Carey nodded. He was listening anxiously for the plane. It would descend vertically with the engine cut off, but landing on the roof would make some noise. He wondered desperately how he could get away. He was unarmed, and though Ziggsy and Jim had removed their shoulder holsters with their coats, the automatics were within easy reach. He suspected he wouldn't have much chance in a rough and tumble fight.

Suddenly there was a crash on the roof, followed by a shout from the ground.

"What the hell!" exclaimed Ziggsy, rushing toward the window, followed by Jim. Taking advantage of the opportunity, Carey leaped for the guns in the holsters hanging over the back of the chairs the men had left.

"What's the trouble?" Jim shouted out of the window. Ziggsy glanced around to speak to Carey and saw him, a gun in each hand, retreating toward the hall.

Ziggsy's startled oath drew Jim's attention from the window. "Stay where you are!" snapped Carey. "I don't want to shoot either of you unless I have to."

They gazed at him in open-mouthed astonishment. "Keep your fingers away from them triggers, Perfessor," begged Ziggsy. "Them guns shoots awful easy."

"You do as I tell you," said Carey, "and you won't get hurt."

"What's the use of actin' this way?" asked Jim. "You couldn't get away from Spring River if you had fifty guns. You'll only get us in bad without doin' yourself no good."

"You two boys stay here," Carey ordered. "I'm going into the bedroom. If you try to follow me it'll be just too bad."

CHAPTER VI.

Escape!

HE backed slowly through the door and slammed it after him. He ran across the hall into the bedroom, where he dragged the heavy bureau against the door. Using the back of a chair for a ladder he managed to reach the bolt which fastened the trap door in the closet ceiling. It stuck at first, but finally yielded. He heard voices in the living room and realized the gorillas were calling out of a window to someone on the ground.

He swung himself up and sat precariously on the closet shelf. Bracing his feet against the opposite wall, he pushed the trap door open. Now all he had to do was pull himself through the opening to the roof. As he reached up to grasp the ledge there was a sudden commotion in the hall and he heard the bureau being forced away from the door.

"Where is the — — —?" a voice shouted.

He braced himself again on the shelf and waited, pistol in hand. The closet door was flung open and two men looked up at him. "Come on, boys," shouted one of them. "We've got the skunk!"

Deliberately Carey pressed the trigger. The roar in the confined space deafened him and a stream of bullets tore downward. The faces below disappeared. He glanced upward and saw a man looking through the trap door. As he reached for the ledge again his hands were grasped and he was dragged out on the roof.

Carey recognized Adams' voice and in the darkness he could vaguely distinguish three men. They rushed him toward the autogiro as the beam of a searchlight began to explore the sky.

"Looks as if we were going to get away easily," said Adams as the plane glided into the air. A second later the searchlight picked them up.

"Think they'll fire on us?" asked a man in uniform whom Carey did not know.

"I don't believe so," he answered. "They will count on stopping our motor. They

have a ray machine," he went on to explain, "which can put the ignition system of any internal combustion engine out of commission. They haven't found out yet that we have a Diesel motor which doesn't use an ignition system."

"I guess they've found it out now," said Adams, looking down at a flying field which suddenly sprang into view as flood lights were turned on. "Yes, they've found out all right. There's a couple of planes starting up after us."

The pilot laughed. "They ain't got a chance in a million of catching us, or hitting us either. We should be landing in about ten minutes."

Late that night an army plane left Chicago for Washington with Carey and Adams as passengers. Early the next morning they appeared at a hastily summoned meeting of the President's cabinet. Carey related what he had learned from Angelino and from observation of the IBPA headquarters. Officials of the Army, Navy and Justice Departments were instructed to check up immediately on the information.

A few hours later reports confirming all Carey had told the President and the cabinet began trickling in. The authorities were astounded at the extent of the conspiracy. The IBPA had added to its numbers thousands of men who regarded it as similar to the Fascist organizations of several European countries. A large proportion of these adherents were undoubtedly sincere in their belief that a change in the form of government would be beneficial, and had entirely lost sight of the criminal history of the IBPA.

THE night of August twenty-eighth there was little sleep in any of the government departments. Already what amounted to martial law was in force, though no announcement to that effect was made. All means of communication were quietly taken over. Secret Service men arrested travelers who could not give satisfactory account of themselves. Troop movements on an extensive scale began that night.

Early in the morning of the twenty-ninth, Carey and Adams left for Chicago. A gov-

ernment plane landed them at the Great Lakes Naval Station, where they met Colonel Herrington who was in charge of the coordinated forces in the Chicago area.

Angelino had told Carey that the revolution was to start on September third. There was a bare chance that on account of the escape of Carey, an attempt would be made to advance the date. However, it was considered unlikely by the War Department that the elaborate plans of the IBPA could be readily changed.

The General Staff decided that the government should strike first. An attack on the conspirators would be made simultaneously all over the country. In Chicago it would start at one minute after midnight, Central Time, September first; in the East, one minute after one A.M., Eastern Time; in Denver, one minute after eleven P.M., August thirty-first, Mountain Time; in San Francisco, one minute after ten P.M., Pacific Time.

After reaching Chicago, Carey spent forty-eight hours in the basement of the Administration Building at the Naval Station with a staff of mechanics, preparing the ether wave generator for service. He had little time for sleep during the two days, and he was very tired as midnight of August thirty-first approached. He hurried to join the grim-faced group of men gathered in the central rotunda of the Communications Building, watching the large ground-glass screen on which messages telling of the progress of the attack would appear as they were sent from Washington.

In the various corridors radiating from the rotunda were the hundreds of operators in the Communications Department before their telephone switchboards, telegraph instruments, directional beam radio and television instruments.

"Funny you're not getting something by this time, Colonel," said Adams to Colonel Herrington as he gazed at the blank screen.

"We're purposely not receiving anything," replied Colonel Herrington. "We discovered that the IBPA had devised a very clever way of tapping messages conveyed over wires by a system of induction."

"That's one thing they didn't discover,"

said a gray-haired naval officer. "The German submarines used to do that during the war. They'd lie on the bottom alongside a cable and get every message going over it."

"Well, that's what those fellows have been doing for years," said Colonel Herrington, "though we just found it out. We decided not to run any risk of warning them before the attack begins." He glanced at his watch. "That will be ten minutes now. It will be too late after that to do them any good if they do intercept our messages."

War!

THERE was tense silence in the room as the hands of a synchronized clock on the wall crept around toward midnight. Suddenly a time signal sounded.

"Well, the waiting is over, anyhow," said Colonel Herrington. "We'll get some news in a few minutes." As he spoke, printed words began to travel across the screen.

"Washington, 1:01 E.S.T. Trains everywhere in the U. S. are being held at stations or stopped by signal. Within thirty minutes there will not be a wheel turning in the U. S. All highways have been closed by U. S. troops."

Colonel Herrington nodded in satisfaction. "That means transportation is paralyzed already," he said. "Trains stopped, roads closed, planes commandeered and wireless communication jammed by interference on all wave lengths."

"Washington, 1:15 E.S.T. All known gangsters and habitual criminals being rounded up in all parts of the country. As yet there has been no serious resistance."

Colonel Herrington pressed a button. "Televisors," he ordered. "City and suburbs."

Instantly there appeared on the screen rapidly moving pictures. Troops were seen entering houses and dragging out men. A group of men shackled together, marching between soldiers. Empty streets with deserted automobiles and street cars.

"What's going on at Spring River?" asked Carey.

Colonel Harrington spoke into the square

box beside him. A picture of the deserted streets of a small town flitted across the screen.

"Looks as if they were all in bed," suggested Adams.

"They'll be getting up soon enough," said Colonel Herrington. "Troops are massed solidly around the town and all roads reaching it are guarded. Troops have taken possession of the city freight subways and the underground warehouses of the IBPA."

"I wonder what Angelino's waiting for?" said Adams. "He must know what's happening by this time."

"Maybe he's getting ready the 'surprise weapon' he told Carey he had—the 'devil feeder'. I'm delaying the attack on Spring River until we find out if we're up against anything we haven't prepared for."

"If they've turned on the detonating ray machines, they must be wondering why nothing's happened."

"We made a thorough job of that," said Colonel Herrington. "There isn't any explosive of any kind within a hundred miles of Chicago. Not a soldier has a cartridge on him."

"Have any trouble?"

Colonel Herrington smiled rather grimly. "It was a little difficult to get hold of all the explosives in the possession of contractors without giving any reason. We carted everything off without making explanations, and the owners were told to keep their mouths shut. Some of them didn't like it."

"What about the soldiers. Any trouble with them?"

Colonel Herrington's eyebrows went up. "Soldiers obey orders. Besides, they rather liked the idea of using bayonets."

"Well," said Carey, "it looks as if you'd spiked the two weapons Angelino was depending on. The detonating rays are no good without explosives to set off. There are no cars or planes running, so they can't paralyze ignition systems. It leaves the IBPA fairly helpless, unless they really have the secret weapon up their sleeves that Angelino claims they have."

Colonel Herrington pressed a button on his desk.

"Televisors off," he ordered.

The pictures faded from the screen and a string of words flitted across it. "—no serious trouble except in New York, Chicago, New Orleans and San Francisco. Many persons killed by explosions in some of these cities, presumably set off by detonating ray machines."

COLONEL HERRINGTON frowned as he read the message. "The IBPA undoubtedly has centers in other places like the one in Chicago," he said, "but on a smaller scale. Unfortunately, the government hasn't been able to locate them." He turned to Carey. "We'd have had a much more serious job on our hands if it hadn't been for you, Professor."

Carey was looking thoughtful. "I don't like the way things are going," he said. "We're winning too easily."

"Don't worry about that," replied Colonel Herrington grimly. "The fight's not over yet."

A message appeared on the screen. "1:45 E. S. T. In New York and New Orleans, ignition systems of all internal combustion engines have failed. This effect is undoubtedly due to the ray machines of the IBPA and was anticipated. A sufficient number of Diesel motored cars, trucks and planes have been supplied all commands."

A buzzer sounded on Colonel Herrington's desk. He turned a switch and a voice spoke from the box beside him. "Something wrong in the freight tunnels, sir. We can't get any of the Communications men."

"Any report from Colonel Weldon?"

"He reported five minutes ago that all operations were proceeding as planned."

"See if you can get hold of him."

Colonel Herrington turned to the listening men. "We have three thousand troops occupying the sixty-five miles of the freight tunnels," he explained, "with Communications men each half mile. They've been reporting every fifteen minutes by short wave radio. Now we can't reach them. It looks bad."

"Who's Colonel Weldon?" asked Adams.

"He's in command of the troops guarding the Loop."

"Colonel Weldon calling Commanding Officer," came a voice from the box.

"Colonel Herrington speaking. What's wrong in the tunnels?"

"They're on fire. The heat is so intense we can't get near them."

"What about the men?"

"They didn't have a chance to escape. One minute everything was all right. The next the tunnels were a solid mass of flame."

"Damnation!" exclaimed Colonel Herrington. "What started it? What is there in the tunnels to burn?"

"I don't know. Nothing, I should think. I'm reporting what happened. Flames from the subway entrances have set a number of the Loop buildings on fire. There's going to be a conflagration if we don't do something pretty quick."

"Use your own judgment. See that your men aren't trapped the way the poor devils in the tunnels were."

CHAPTER VII.

Devil Feeders

COLONEL HERRINGTON turned to Carey. "You heard what he said? No use ordering the fire department out. None of the motor apparatus would run. What's burning in those tunnels, Carey? You know more about it than anybody else."

"I don't know anything," replied Carey, "but I can guess. It's the 'devil-feeders' Angelino told me he had."

"What do you suppose they are? Something like the flame projectors they used in the war?"

Carey shook his head. "They'd be pretty nearly as dangerous to the men using them as to the enemy, in a confined space like the tunnels. No, this is something a lot more serious. I imagine we're up against another invention of the IBPA scientists—probably some kind of ray which heats to incandescence any object it touches."

Colonel Herrington's face was grim. "If Angelino has a weapon like that, he can turn it on our men anywhere and burn them

up just as he did those in the tunnels, can't he?"

"Exactly. The only way we can stop him, as far as I can see, is to attack him from the rear."

"That's going to cost a lot of men. It looks to me as if he could hold off the whole United States army."

"There are ways of getting at him," said Carey.

"We'll have to use your generator," Herrington said.

Carey stared at him. "You're suggesting we use it here in the city?"

"Naturally. That's where the fighting is."

"What about the people who live here? What about the women and children and old people?" He shook his head. "I won't take a chance on using the generator except at Spring River, as I agreed."

"Suppose I order you to use it in the Loop?"

"I'm sorry, but it won't make any difference. If I did that, all of downtown Chicago, and us with it, might disappear like a soap bubble when it bursts."

Colonel Herrington flushed angrily. "What's the use of having a weapon you're afraid to use?"

"It isn't a question of being afraid. We simply don't know what the effect of a machine this size will be. The little experimental one in the fraction of a second stopped all visible motion. The big one will probably destroy matter by stopping atomic motion. I'll risk using it to attack the IBPA headquarters at Spring River. The way Angelino has the place protected, we can't attack it any other way. I won't risk using the generator in a city where there are millions of people."

"What do you suggest doing, then?" asked Colonel Herrington less truculently. "The gangsters have possession of what is practically an underground city. They can come to the surface when they want to and we'll be helpless. You said yourself there was nothing to stop them from destroying the troops with their heat rays."

"There's one thing we can do," said Carey. "We can turn the Chicago River into the

underground city and drown them like rats."

Colonel Herrington snorted. "How are we going to do it? Even if we knew where to blast a channel, we couldn't use explosives. The detonating rays would set them off before we could put them in position."

"Did you ever hear of the Hartridge cosmic gun?" asked Carey.

"Hartridge," repeated Colonel Herrington. "Wasn't he the man who was murdered by somebody who turned his own machine on him?"

Carey nodded. "He invented a machine which concentrated what are known as the cosmic rays coming from outer space. It was practically a gun which destroyed everything in its path. The biggest machine Hartridge built would carve a tunnel six feet in diameter through a mountain in a few seconds."

"What good does that do us now?" demanded Colonel Herrington.

"A Dr. Goodrich spent ten years after the murder rediscovering Hartridge's secrets. There are now about twenty of these machines in the United States. One of them is here in Chicago."

COLONEL HERRINGTON frowned. "How could it be in Chicago without my knowing it? Who's responsible for it?"

"I haven't the faintest idea. The government doesn't publish secrets of that kind. I suggest you get in touch with Washington. Tell them what the situation is here and tell them you must have the Hartridge cosmic gun."

Colonel Herrington, after a moment's hesitation, strode from the room. The others stayed to watch the messages flitting across the screen. Except in a few of the larger cities, the situation seemed to be well under control.

The IBPA had apparently been taken by surprise. In New York, Washington, and St. Louis, troops had occupied the headquarters and workshops of the organization without a struggle. Large stores of arms and explosives had been found in each of these places, as well as intricate machines, the uses of which were unknown.

The leaders of the organization remained silent when arrested, but their followers talked freely. Papers found at the various headquarters involved numerous business men and capitalists who had been frightened by paternalistic ventures of the government and saw a chance to establish a reactionary dictatorship. These men were being arrested as rapidly as they could be rounded up. The authorities in Washington announced that all such individuals actually involved in the conspiracy would be tried for treason.

Martial law covering the entire country was declared at two A. M. Eastern Standard Time. Instructions were despatched to all military commanders that persons arrested in the conspiracy be tried immediately by courts martial and if convicted, summarily executed.

The Hartridge Cosmic Gun

THE Hartridge Cosmic Gun was in a secretly constructed, hermetically sealed chamber beneath the Administration Building at the Naval Station. After Colonel Herrington had obtained all the information that the General-Staff in Washington could give him, it required nearly an hour to reach it. Every precaution had been taken to keep the machine from being tampered with. Because of the disintegrating effect of the cosmic rays, it was, next to Carey's ether wave generator, the most destructive mechanism in the world and even more dangerous to handle than the generator.

When the door to the sealed underground chamber were opened, the machine did not look particularly impressive to the half dozen men who gazed at it. It was rather like a group of searchlights mounted on a wheeled platform. Carey examined it carefully, comparing the operating levers with a diagram he held in his hand.

"Think you can use it?" asked Colonel Herrington.

Carey nodded. "I think so. We'll have to take a chance, anyhow. Be careful when we wheel it into the elevator, that no one touches these levers. They're set at neutral now."

The elevator which ran to the level of the secret chamber was hydraulic and was not affected by the IBPA ray machines. Waiting at the loading platform in the basement of the Administration Building was a Diesel motored truck. The cosmic gun was carefully loaded on this truck, which then proceeded in the direction of the Loop.

Carey selected a spot on the north bank of the Chicago River, just beyond the State Street bridge, to begin operations.

"You fellows better get back a block or two," he said to Adams, Colonel Herrington and a group of officers who had accompanied the truck. "I think I know how to operate the gun, but something unexpected might happen."

"I guess I'll stay," said Adams.

"We're staying too," said Colonel Herrington. "If the job isn't too dangerous for a college professor and a newspaper man, the army can take a chance. You might tell us what you're going to do, so we'll know what to expect."

"I suppose you know what the cosmic rays are?" Carey asked. Without waiting for a reply he continued, "They are very short rays coming from some unknown source in outer space. They are incomparably more powerful than any other rays known, penetrating fifty feet of water or nine feet of lead. Hartridge discovered a substance which reflected them just as a mirror reflects sunlight.

"By making lenses of this substance it is possible to concentrate the rays. That is what all these things that look like searchlights are for. The beam resulting is so powerful that it cuts through rock just as a blow torch would cut through a snowbank. The machine can be made of any size and power. This particular one will cut a tunnel six feet in diameter an indefinite distance through the earth—hundreds of miles, probably."

"What starts it going?" asked Adams.

"This lever here," answered Carey, "deflects the rays which reach the earth vertically to any direction desired. If I turn it ninety degrees the rays will be directed horizontally. I want them to carve a tunnel from this river into the underground maze

of passages and chambers below the Loop which are now in the hands of the IBPA. If I pull the lever, say a hundred and ten degrees, the rays will be deflected slightly downward. They will strike the water about the middle of the river, penetrate the bank and thence across the city."

"You say they'll make a tunnel six feet in diameter?" asked Colonel Herrington. "Then the river will rush through this tunnel and flood underground Chicago?"

"That's my idea," acknowledged Carey. "The first tunnel we make may not reach all underground passages, but it will destroy all water tunnels and sewers in its path. If everything turns out as we expect, we'll make five or six more at various points. I'm going to move the direction lever now, but nothing will happen." He grasped a handle and pulled it toward him. "Nothing happens because all I've done is change the direction of the rays. Now I'll move the focussing lever. Better protect your faces. When the concentrated rays strike the water, I think it will be vaporized. I don't know what the exact effect will be. Here goes."

THERE was a flash of violet light enveloping the gun, and then the river seemed to explode with a roar that was heard blocks away. From the machine a cylinder of incandescence six feet in diameter penetrated the river at a slight angle to the surface, and reaching the bank, extended itself in a glowing tunnel through the earth.

The watchers had started back as great clouds of steam turning to clouds of white vapor billowed toward the sky. The waters surrounding the cylinder of radiant light as if it were a tube of some material substance, were in violent agitation.

Suddenly Carey reversed the lever and the violet glow faded as the cylinder of incandescence was cut off. The darkness after the brilliant light, and the clouds of steam still rising, made it impossible for the waiting men to see exactly what results had been attained.

"Swing the searchlight around," Carey called to the driver of the truck on which

the gun was mounted. "Point it over at the opposite bank."

The light showed the water rushing into what looked like the mouth of an immense sewer.

"Well, I guess that does it," said Colonel Herrington. "That'll drown out the rats."

Carey shook his head. "We'd better make half a dozen more to be on the safe side."

They noticed the glare in the west after they had finished the fourth tunnel. Colonel Herrington watched it with frowning face as it spread against the sky.

"I'll have to get back to headquarters," he said to Carey. "You bring the gun back as soon as you finish the next tunnel."

A messenger in a rocket car met Carey and Adams as they were starting back to the Naval Station a half hour later. The glow in the sky had become a lurid glare of mounting flames and billowing clouds of smoke.

"The whole West Side's on fire," said the messenger. "The colonel wants you in a hurry."

Colonel Herrington was pacing up and down the rotunda of the Communications Building, watching the television pictures of the conflagration appearing on the screen.

"That's Angelino's revenge!" he exclaimed. "He knows now he's whipped and he's going to destroy the city!"

"What happened?" asked Carey, gazing at the rapidly changing pictures which were largely obscured by great clouds of smoke.

"It began when we put the first tunnel through, I imagine," said Colonel Herrington. "I told you we had troops surrounding Spring River, waiting developments. I figured you'd have to use your wave generator out there, and I didn't want to sacrifice men unnecessarily. They were sacrificed, all right," he added grimly.

"The heat ray machine?" asked Carey.

Colonel Herrington nodded. "We'd kept the troops some distance away from the brewery buildings. We knew that was the danger spot. The IBPA must have had the heat ray machines stationed in a circle around the town. Not many of the soldiers got away, and those who did weren't

stationed close enough to get a very clear idea of what happened."

"What kind of stories do they tell?"

"It's hard to make sense of them. Apparently the 'devil feeders' can swing around like a searchlight. The rays were invisible, but everything in their path shriveled up or burst into flame. The men who escaped took shelter in holes or under banks while the rays passed over them."

"How about the people living out there?"

"God knows. Spring River is destroyed, of course. The people on the West Side had a little warning. The fire seemed to advance in waves."

"Advanced in waves, did it?" said Carey thoughtfully. "That's curious."

"My God, man, don't stand there talking about it! The city is burning up! Do something!"

"All right. I'm willing to use the ether wave generator now."

The Ether Wave Generator

FIFTEEN minutes later a weird looking machine slowly and ponderously started up the incline from the basement of the Communications Building to the street. The motive power was a five ton Diesel-motored truck, and it drew a semi-trailer thirty feet long and ten feet wide, rated at forty tons capacity. This trailer had a six foot high wall of armor plate around it, protecting an intricate mass of machinery and the dozen men who operated it.

This machinery was a nightmare of fans, pumps and turbines, culminating in two enormous cylinders of some shining metal which rose from the rear of the truck. These cylinders narrowed at the top and were inclined toward each other exactly like the two tubes of an oxy-acetylene torch. Between the cylinders and slightly in the rear, Carey was seated before a series of levers and dials which looked rather like those of a very elaborate one-man-control motor boat.

Colonel Herrington stood beside him, looking dubiously at the massive blow-pipe arrangement.

"That's what does the damage?" he asked.

"That's it," replied Carey. "The principle isn't difficult to understand. Light, electricity, magnetism, rays of all kinds are vibrations of the ether just as sound is a vibration of the air. What this machine does is set up artificial waves in the ether which are so much more powerful than any produced naturally that the natural ones are destroyed."

"What's going to happen when you turn it on? Will it destroy those heat ray machines and put out the fire?"

"I'm afraid it's going to do more than that. I'm afraid everything the waves come in contact with will just disappear as if they had never existed."

"If the waves destroy everything they touch," asked the Colonel, "why don't they destroy the machine itself when you produce them?"

"They would if we produced them in the machine. See how the orifices of those two big cylinders up there are inclined toward each other? Remember the ether is material, even if we can't see it or feel it. It is set in motion in those two cylinders in such a way that when the two streams meet up there, they join to form the destructive waves which project themselves forward in a straight line."

"I'm afraid it's too complicated for me," said Colonel Herrington. "All I hope is, that it works the way you think it will."

"Oh yes," Carey said. "That part was all a matter of mathematical calculation after we had produced the ether waves artificially."

The truck was now moving slowly through West Side streets crowded with hysterical men, women and children, fleeing from the conflagration with whatever belongings they could carry. Some had toy express wagons loaded with bedding. There was an occasional push cart piled high with furniture or carrying someone too ill or old to walk. People had grown to depend on automobiles to such an extent that without them they were almost helpless.

The advancing flames formed a fiery wall against the western sky and were accompanied by a terror-inspiring roar. Great

burning fragments of building sailed through the air, setting fires ahead of the main conflagration.

"How much farther are you going before you start the generator?" asked Colonel Herrington.

"As far as we can go with reasonable safety. Remember, everything ahead of us will be destroyed—wiped out. You don't expect me to turn it on these women and children, do you?"

"Of course not, but don't run the risk of being caught by the flames yourself. You have to turn the truck around to work the generator, don't you?"

CAREY shook his head. "This whole platform on which the machinery rests turns through a hundred and eighty degrees, like the turret of a battleship."

"Look out!" yelled Colonel Herrington, dodging a flaming brand which narrowly missed his head.

Perspiration was streaming from the faces of all the men on the truck as solid waves of heat bore down on them. The wall of flame now seemed to curl above their heads in an arch extending across the sky, while clouds of acrid smoke strangled them.

"Swing around into the first wide street," Carey shouted to the driver, who waved the arm with which he was trying to protect his face from the flying brands. A moment later he turned down a cross street which opened into Garfield Park. The line of the advancing fire was only a few hundred yards ahead and even the stragglers had disappeared.

Carey pulled a lever and the platform of the trailer began slowly to turn until the wave projector was pointed at the center of the conflagration.

He smiled grimly at Colonel Herrington. "You're going to see now something no one has ever seen before, but I'm not sure you'll be alive to remember it long." He glanced around at the men. "Everything ready?" he called.

"All O. K." they responded.

"Then here goes."

He took a key from his pocket and unlocked what looked like an automatic steer-

ing wheel. This he turned slowly to the left while the watchers fixed their eyes on the juncture of the two nozzles at the top of the cylinders.

After it was over, Adams reverted to character as a newspaper man and gathered the impressions of all who shared in the experience. They agreed that their first sensation was one of hearing. There was a sudden shrill whistling sound, instantly increasing to a roar which drowned out the sound of the flames. Carey explained this as being due to the rush of air into the vacuum created by the ether waves which destroyed the air in their path as they did all other matter.

The next sensation following immediately was one of sight. A few inches beyond the juncture of the nozzles there occurred a phenomenon which no one was able to describe very clearly. It was like a terrifically rapid pulsation or vibration of a ghostly, silvery radiance. The spectators seemed to feel it as much as they saw it and it lasted only a few seconds, if it actually occurred. Half of the men were doubtful about its reality. They were unanimous in their description of the opalescent, milky cloud which projected itself in a broad spreading sheet from the nozzles toward the area in flames.

Carey was the only one of them who had any idea of the lapse of time. The others estimated the period the wave generator was in operation as being from ten minutes to half an hour. Carey, with his eyes fixed on his wrist watch, knew the interval was fifteen seconds.

With the sudden cessation of the roaring they found themselves deafened and had to shout to make one another hear. Where the fire had been raging the opalescent cloud still persisted, but was being rolled into great billows by a furious wind which suddenly rose. In a few minutes began the curious electrical phenomena which have been described elsewhere, followed by a downpour of rain which drove the men from the truck to the shelter of a deserted house.

Two hours later the storm ceased as suddenly as it had begun. The gray in the

East changed to pink and the sun rose on what was probably the strangest scene that civilized man had ever beheld. As far as the eye could see was nothing except a flat level plain as smooth as a billiard table. Not a house, a tree or a blade of grass was on it. It was as if a great knife had sliced a piece off the round side of the earth.

IT was found afterward that that was practically what had occurred. The waves from the machine, travelling in a straight line, disintegrated all matter with which they came into contact, levelling off the curved surface of the earth and then passing out through the atmosphere into space.

The fact that science had discovered a way to unleash such a destructive power distracted interest from the abortive revolution which had occasioned its use.

The IBPA headquarters and workshops disappeared, with everything else in the devastated region. Angelino and his followers were wiped out with the thousands of innocent people who perished. Unquestionably many of the gangsters had died a few hours before in the flooding of the subways and underground chambers by the Chicago River.

With the death of Angelino and the destruction of the Chicago headquarters, the revolutionary movement would have collapsed, even if most of its surviving leaders had not been imprisoned. These leaders and their followers with gangster records were quietly and efficiently executed. Those whose chief crime had been an attempt to establish a strong and efficient government on Fascist principles were sentenced to short terms of imprisonment.

Only a few persons know what disposition was made of the ether wave generator. There was strong newspaper demand that it be destroyed for fear its secret might be learned by some new Angelino with an ambition to dominate the world. All that the public knows certainly is that it has disappeared.

Colonel Herrington is now in command of the Eighty-seventh Division of the United States army with headquarters in New Orleans. Professor Carey has returned to his

chair at the University of Chicago, but spends most of his time in research. Adams is the editor of the New York Times.

The most important result of the abortive revolution was the establishment of a federal police force which has authority

coordinate with that of the army and navy. With the abolition of corrupt, politically controlled local police departments, organized crime has disappeared. Life in large cities has become more prosaic, but much safer.

THE END

FOR THE NEW LARGE SIZE NOVEMBER ISSUE

we offer

a sequel to the triumph of Clark Ashton Smith, acclaimed so by our readers. In

"Beyond the Singing Flame"

Mr. Smith carries on the adventures of his explorers in that strangest of dimensions. As Mr. Smith says himself, "The description of the Inner Dimension is a daring flight; and I have almost set myself the impossible task that Dante attempted in his account of Paradise." *You will be thrilled by this story!*

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we have the most vivid, gripping account of a life fantastic, yet scientifically possible; and its conflict with our own civilization. This is no mere "strange form of life" story but a masterpiece of description and action in which you feel as a chill through your blood the awful power of the Tetrahedra.

The returns on the contest, to find an ending for Jack Williamson's "Twelve Hours To Live," were so unexpectedly large that the editors have been swamped. From the letters we have read, our readers, especially the younger ones, have shown an astounding ingenuity in working out the problem of the two chests. By a rough count several thousand letters have been received. The results, with the winning letters, will be published in the November issue.

The final installment of the Schachner and Zagat sensation,

"Exiles of the Moon"

will treat you to a whirl of fast-moving events on two worlds. The Workers have struck and scored. But the Aristocrats will not tamely submit to the loss of their power. The most terrible part of the conflict is yet to come. The outcome is in doubt! But in this keen insight of our authors into the future, you will find in this last installment not only a breathless finish, but a moral that must set you thinking!

AND OTHER STORIES IN THE NEW LARGE SIZE
NOVEMBER WONDER STORIES ON SALE OCTOBER 1.

Death from the Stars

By A. R. Hilliard



(Illustrated by Marchioni)

He went on with his work. Upon the thing that had been George Dixon he poured a gallon of the fluid.

GEORGE DIXON was struggling wildly amidst a great conflagration. Fire burned his body; blazed before his eyes, roared in his ears. For hours and hours he struggled, wondering why he was not consumed . . .

And then he awakened, to the recognition of his own bedroom and the fact that he had been dreaming. But that burning feeling of his body did not cease. Neither did the bright flashes of light before his eyes, the roaring in his ears; and these phenomena were ten times stranger now than in a dream. His limbs twitched convulsively under the bed-clothes.

Must he sick, he thought. Nerves a bit frazzled lately. Overwork, perhaps; but he hated to admit that. Couldn't give up work now. No, not now. He rolled over, and groaned. Rotten feeling! Feel better in the morning, most likely. Had to. Had to watch his little block. He was worried about it. It had been getting smaller right along, and sort of crumbling. Yes, instead of growing it was shrinking away; and he couldn't understand that — couldn't see where it disappeared . . .

For an hour he tossed uneasily on the bed. Although his bodily discomfort was steadily growing, it was

Death From the Stars

By the author of
"The Avenging Ray"
"The Island of the Giants"

IN this gripping story, we get a peek into a few of the most profound mysteries of the universe. Many modern scientists say that "life is a disease that attacks matter in its old age" — that when matter cools and loses its primal energy only then is life possible.

Life being a disease, all forms of life feed on each other — we are all in a sense bacteria consuming each other in a fierce struggle for existence.

There are many hundreds of forms of life that we know of, and whose properties we dimly sense. But how about the infinity of possible forms of whose properties we know nothing? Suppose we were exposed to such a thing? Would there be a gigantic struggle for existence, the human race battling against a terrible unknown enemy?

Mr. Hilliard has given us here, no world shaking epic, but a grim, intense struggle against a devastating ravage. The precise nature of the enemy is not made clear, nor would it be clear to us were we to meet it. But we can sense in it the infinite forces of the universe massed against puny man. This story marks a new notch of achievement for Mr. Hilliard as a writer of stories about possible things.

not that which occupied his mind. He was worrying about his little block, down in the laboratory. If he could all right, he might get threw back the covers, swung his feet to the floor, and stood up. Uttering a low, startled cry he swayed dizzily, and leaned against the wall for support.

"Something pretty darned wrong!" he said aloud. His voice sounded strange and high-pitched, in his own ears. He found the light switch.

The journey down the stairs was long and terrible. He held fast to the banisters, taking one step at a time. Ordinary muscular coordination seemed to have deserted him. Each movement required an effort of will. He could not last long. Having gained the foot of the stairs, he staggered to the laboratory door on the right; burst in, and switched on the light. There was a long moment of complete silence. Then he gave a hoarse cry.

The laboratory was a large, square room, with long windows on two sides. Against the walls were set lead-topped tables, littered with tubes, retorts, and various electrical devices. But it was towards the center of the room that George Dixon stared, wide-eyed. There, on a small table, under a bell-jar,

reposed a little heap of black dust. Nothing more. There was certainly nothing in the exhibit to astonish or terrify an ordinary observer.

Yet George Dixon was both astonished and terrified. For he knew that, only yesterday, there had been, under that jar, a pretty fair sized block, composed of his "life force". And now it was gone. Where?

Things had to go somewhere, he told himself. The jar was sealed tightly to the glass plate beneath. Yet there remained only black dust—and George knew what that was.

He laid his hand on the glass. Warm, but not hot. His eyes wandered around the room—then became fixed upon a grotesque object on the window ledge. It was—or, rather, had been—his geranium plant; but now the leaves were a dead black. As he watched, one of them dropped off, and crumbled to powder on the floor.

George drew his hand across his eyes. Something was happening—something he could not understand. He must try to think. But it was hard to think. His mind didn't seem to work right—kept wandering. He wished Julius were there. Julius would help him.

HE stared at the geranium plant. Even the stalk was black. It was crumbling away—as his little block had crumbled. But that didn't make it any easier. No, he couldn't think. If only Julius . . .

He remembered the things Julius had said when they had last talked together. Julius had come to visit him—an unusual occurrence—saying that he was interested in a proposed experiment George had mentioned in a letter. George had explained cautiously his intention to explore for life in substances deposited on the earth from outside.

"What is life?" Julius had asked abrupt-

ly. George remembered laughing. Julius had a way of asking unanswerable questions. George had muttered something about Assimilation.

"Life is a disease,"—Julius had a way of asking unanswerable questions—and then answering them.

"Disease!" George had exclaimed.

"Exactly. A disease or corruption which afflicts the stagnant matter which is our earth. This planet's matter is very low in energy. It is cooling—disintegrating. And you and I are the crawling, writhing maggots of its decay."

"Horrible and preposterous!"

"Horrible, perhaps—but not preposterous. We say that life cannot exist upon the sun.

Why? Because the sun is too hot for it. What does that mean? Merely that the sun has the protective energy to purge or sterilize itself of such 'life' as we represent. Place a needle point in the flame—as the doctor uses daily; there you have the same sort of sterilization, on a small scale."

George had been slightly indignant. "You put a disagreeable interpretation, on a small mon facts. That may amuse you, Julius; but I fail to see how such spec-

ulations can have any practical value . . ."

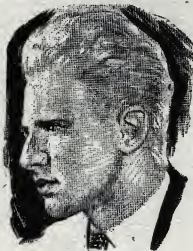
"They might serve as a warning to such as you."

"Warning?"

"Yes. If I understand your motives correctly, you want to explore for life in meteoric substances. Since they consist of matter in a very low state of energy—and because mere cold is not always fatal to life, even as we know it, I fully believe that you will find what you are looking for."

"That is gratifying. It makes you practically unique among scientists!"

Julius had not appeared amused. "But I am far from believing that you are wise in



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attempting it. When you find it—what then?"

"What then?—I don't understand you."

"Well—do you expect it to be identical with some form of life we experience on earth?"

"Not necessarily."

"Probably?"

"No. I should say that the probability points in the other direction. Life is a product of its environment; and it would be a remarkable coincidence if this supposed new life had developed under conditions identical with those on earth.

"It is my theory that some such 'life' may exist in meteoric substances, in a state of suspended animation—induced perhaps by lack of heat and most certainly by lack of food. To put it briefly, I intend to test for its presence with a variety of temperatures and a variety of foods"

George remembered that Julius had nodded absently. There had been a strange look in his heavy eyes as he asked quietly:

"And are you not afraid?"

George shuddered, now, as he lay back in his chair. He felt dizzy and sick. His body was numb, with that helpless, prickly numbness one sometimes feels locally when his foot is "asleep". Yes, he was afraid now—but then he had merely said:

"Afraid?—afraid of what?"

"Good Lord, man, don't you see it? You have just admitted that you expect this new life to be different from anything on earth"

"But I don't see why a mere difference—"

"Wait! Let us go a little more deeply into this life—as-a-disease idea. Not only is life as a whole a disease of matter, but each species of life is a disease to every other. The tubercular bacillus on the wall of your lung has no more personal animosity towards you than you had towards the duck you ate for dinner. It is merely living off its environment, as you are. Obviously, mankind is as truly a disease of ducks as tuberculosis is of mankind"

Julius Makes A Gift

"I SEE what you are driving at. You mean that any new life I might dis-

cover would automatically be hostile to many or all terrestrial species. Yet I see nothing terrifying in that. Man has certainly dealt with any number of hostile species during his existence, and has—"

"Man has dealt with nothing!" Julius cut in angrily. "Man has *been* dealt with. You talk as if he had arrived at his present form by an act of will, and fine determination. That is contrary to the first principles of evolutionary science. Man is a form of life that has been shaped by its enemies. Yet even after millions of years of adaptation, he is not immune to attack—attack by species which are a part of the very environment in which he has developed And you propose to introduce something new. Good God!"

When angry, Julius was somewhat overbearing. George had asked meekly, "Well then, would you advise me to give up the idea?"

"No, no, no! Am I your master? Do I do your thinking for you? Damn it, man—make up your own mind! I want to be sure you know what you're about—that's all"

There had never been any doubt in George's mind about what he was going to do. He made that clear.

"All right! Do you have your meteorite?"

"No. It is astonishingly difficult to get hold of one. So far I have had no luck at all."

Julius drew a folded newspaper from his pocket; and held it out, indicating with his finger a paragraph:—

STRANGE THEFT IN MUSEUM

An unidentified man visited the American Museum of Natural History late yesterday afternoon, and departed with one small meteorite, the property of that establishment. He was seen by a guard, rapidly leaving the building, after having stood for some time over a case containing a number of similar exhibits. Dr. Hardman, Curator, when questioned, could suggest no motive for such a theft.

George looked up curiously from the paper. Julius was leaning back, negligently tossing from one hand to the other a small black stone. "Catch!" he said.

Clumsily George caught it. "Why, you

can't—I can't—It isn't right!" he stammered.

"That is my affair!" snapped Julius. "The moral stigma attached to you by the transaction—that of receiving stolen goods, I suppose—is very small and very theoretical. . . ."

"But—"

"But, nothing! That little thing is going to be put to a real use, instead of being eternally gaped at by a succession of idiots who don't give a damn what it is or where it came from. . . . Now I'm going."

"But wait a minute, Julius! What do you really think about this experiment? what is your honest opinion?"

"I think it a very promising line of enquiry and a very laudable task. Praise-worthy, but uncertain."

"What is this 'life' you hope to find? How will you perceive it? Have you stopped to think that there may be life that we cannot observe through the senses developed on Earth—that does not obey the rules we have set up?"

"I suppose you will use Assimilation as a yardstick—a criterion by which to judge. You will look for *something* that increases itself at the expense of other things. A ticklish job, at the best; because that something may be intangible, immeasurable, and altogether strange to you. In other words, you are looking for a new disease—one that you will not understand when you find it. . . . What will it attack? What will it feed on? . . . Who knows?"

Julius had gone, then. An unsociable man, his visits were very rare and very short.

George wished Julius were there now. He needed someone else to think for him. The little block—the food—was gone. *Was* there something there—*something* that increased itself at the expense of other things? Had he succeeded? Was there life? . . . The food was gone. But where was the "something that increased itself?"

Under the glass—it must be. Everything had been sealed tight. . . .

IN the pot on the window-ledge was only a stalk. All the rest was black dust. He stared at it dully. . . . Suddenly a glimpse of something on the arm of his chair made him start violently. It moved towards him—a dead gray thing, splotted with black. He stared at it unbelievably. . . .

It was his hand!

George Dixon struggled to his feet; and stood trembling, in a wild panic. What was happening? He stared at his hands. . . . Diseased! The word brought a new terror. Julius's words rang in his brain:—"Life is a disease. . . . *Something* that increases itself at the expense of other things!" He stared pleadingly at the glass jar. *It* was under the glass. It couldn't get out. . . .

"—Life that we cannot observe through the senses developed on Earth—that does not obey the rules we have set up. . . ."—Some voice was repeating the words in his brain—"That *does not obey the rules. . .*"

A horrible possibility flashed into his mind; and, with a sob, he blundered out of the room, desperately slamming the door. He needed help—he needed Julius. The telephone. . . .

Julius Humboldt was cursing softly as he grasped the receiver, but when he laid it down his expression was very serious. The confused babble on the wire would have been meaningless to anyone else, but it galvanized him into action. Hurriedly, he set about dressing; moving quickly about the tiny room.

Five minutes later, a shabby figure, he tiptoed down a very shabby staircase; and emerged on Tenth Avenue. Turning east, he half walked, half ran along Forty-ninth Street towards Broadway.

Julius Humboldt was shabby because he was poor, and because he did not care anyway. He was taciturn—perhaps a misanthrope, although more inclined to disregard his fellow men than to hate them.

He had once been a professor of chemistry at Columbia University, but constant clashes with the authorities—having mainly to do with his "radical and unfounded theories"—had necessitated his resignation. He now lived precariously on a small annuity

—seldom doing any work of a type calculated to increase his meagre resources. He had few acquaintances and only one friend—young George Dixon.

At Broadway, he plunged down the steps into the subway; and boarded a downtown train. Arriving at the Pennsylvania Station, he learned that the next Port Washington train left at four. Muttering to himself he studied a time-table. 'Great Neck—four-forty . . . He paced up and down the platform . . .

"The block is gone—gone! It's got me . . ."—and then something about a geranium. George had certainly sounded strange—wild. There must be something really wrong.

The block—he knew what the block was. George had written him a letter, outlining his method of procedure. He had broken up the meteorite—pounded and pulverized it into a fine powder. This powder he had mixed with a combination of foodstuffs—animal and vegetable. The whole combination he had then compressed, under great pressure, into a small, square block—which he had then subjected to various temperatures and various frequencies of ultra-violet rays.

A simple, almost childlike performance, Julius reflected. Yet direct and reasonable—characteristic of George. If this gave no results, he would try some other way. But, wait . . .

George had said the block was gone. Gone? Julius stood still, biting his lips. Stolen?—Ridiculous! The thing had no value . . .

The gates clattered open; and, absent-mindedly, he boarded the train. Expensive, these Long Island trains, he thought ruefully. For fellows like George who didn't have to worry about money, it didn't matter.

"—It's got me . . ."—What could he have meant by that? His hands thrust deep in his coat pockets, his chin on his chest, Julius Humboldt pondered the matter, as the train rumbled under the East River and out into Long Island.

Broadcasting Death

AS the journey advanced, he began to feel more agitated. Several times he shook his head violently; and once gave a startled exclamation, causing the few other passengers in the car to turn amused eyes in his direction. Many frowned slightly at sight of the gaunt, forbidding figure with the face that was, by now, very, very grim.

The Great Neck station was deserted, and he set out at a quick pace to cover the half mile to George Dixon's house. The sky was overcast, and no signs of dawn were yet visible. The damp air enveloped him like a black mist, depressing his spirits and seeming to increase the sense of heavy foreboding which he suffered. The large house, set back among trees, was an ominous jet shadow, as he approached it up a winding path. Obsessed with a strange uneasiness, he walked on tiptoe, straining his eyes and ears.

In another instant he was frozen into immobility by a laugh—a sudden, high-pitched, gurgling laugh, it rose and fell and ended in a sob.

He gazed fixedly at the house. That was not George. Who—what—was there? Slowly he advanced, mounted the steps, and laid his hand on the doorknob. From inside the house there came a thrill cry, a crash—then silence.

The door was unlocked. For a long time he stood very still, his head thrust forward. Then he slipped quietly into the black interior. He remembered vaguely the plan of the place. To the left was the laboratory; to the right a sitting room; and straight ahead the stairway, flanked by a narrow hall leading to the back of the house. He moved to the left, and felt along the wall to the laboratory door. A faint line of light showed beneath it. He knocked, and waited but there was no sound. Cautiously, he pushed open the door.

The room was untenanted. Light came from a large globe in the ceiling. He advanced across the floor, his eyes darting to right and left. He paused over the table in the center, and gazed thoughtfully down at the small heap of metallic dust under the jar.

"Pretty well cleaned out," he muttered. "It's gone, all right!" Again he glanced around. This time his eye was caught by the unusual appearance of the flower-pot on the window ledge. It appeared to be filled with something black. He walked over and dug into the surface with his finger. Underneath was dry earth. It was just a thin layer of powder on top. He pursed his lips.

A sound behind made him wheel around, and gaze into the hall-way. Slowly there took shape in the darkness there a crouching, mottled figure. It was a man—half naked—whose skin was a dead grey in color—splotted with black. It was staring at him with wide, fixed eyes; and creeping forward with a convulsive motion of the lower legs. All the hope went out of him, as he recognized George Dixon. He cursed.

"George! — In God's name, what's the matter?"

Julius Humboldt had taken three quick steps forward when the other leaped. He had a flashing glimpse of wide eyes, flaring nostrils, bared teeth—and ducked instinctively. The flying body struck him a glancing blow on the shoulder, and crashed full-length on the floor. He stared at it, horrified.

"George.

The prostrate creature screamed, and beat the floor with its fists. Humboldt recoiled instinctively.

"Mad!" he breathed through white lips. He advanced gingerly; and, kneeling down, placed a hand gently on the other's shoulder. There came a quick, sharp snarl; and he snatched his hand violently from between the other's closing teeth.

Again he leaped back, and stood rigidly still. Hurried thoughts raced through his brain. He would have to do something for George—and do it quick. A doctor . . . ?

He frowned irritably. What would a doctor do? He didn't want some fool messing around and making things worse. What would a doctor treat for? What was wrong with George? — that was the question.

HE had better assume it was the experiment that was doing it. He had been

only half serious when he had warned George about it; but now . . . Obviously the experiment had been a success. George had found something—something that had consumed the food under that jar. Might as well call it "life" as anything else; although it must be totally different from terrestrial life. Something in the form of a ray—light ray, *gamma* ray—something that could pass through glass. Yes, he was pretty sure of that. But then what would it do?

He stood rigidly still, gazing with unseeing eyes down at the now quiet figure on the floor. He must marshal all the facts. He must understand this thing in order to conquer it

George had babbled something about a geranium. Now, what . . . Suddenly he remembered the flower pot, and his eyes widened. At last the thing became clear to him. He felt that he could visualize graphically what had happened—what was happening. Rays shooting out—radiating—in all directions from the jar; passing through the plant on the window ledge—and consuming it; passing through George

He shuddered. The brain, the nerves—the most delicate organs—would go first, naturally. He must do something—get a doctor; a sedative might help. He left the room, and locked the door behind him. Making for the telephone stand, he tripped over something. It was the telephone. It was loose—the wires torn out of the box.

Well, there was an extension in George's bedroom. He took the stairs three at a time. There was a light in the room. He had just picked up the phone when something peculiar caught his eye. The bed sheet was a strange, dark grey in color. He bent closer. Yes—something wrong. He touched it, and started violently. The sheet crumbled to powder under his hand. He shook his head in bewilderment

Obviously the sheet was affected in the same way as George and the geranium. But why the sheet? Why not something nearer the laboratory? . . . Then he gasped, as the full meaning of the phenomenon burst upon him. It was *George* that had infected the sheet. George was being fed on by the

strange disease; therefore, George was giving off the rays—and in enormously greater quantities than the little block had done.

The horror of the situation overcame him, and he sat down heavily upon the bed. George broadcasting Death! He tried to look ahead—to understand the full significance of that fact.

George broadcasting Death—impregnating anything and everything that came near him. And then infected things radiating it, in their turn

Where would it stop? What could stop it? He shrugged his shoulders helplessly. You couldn't fight a thing you knew nothing about The thing would spread like wild-fire. George was a menace to mankind—to all life—to the world!

Absent-mindedly he picked up the telephone; shrugged again; and set it down . . . Couldn't call a doctor. Couldn't call anybody. Nobody would understand. They would take George to a hospital where he would spread disaster at a terrific rate, or they would hang around and infect themselves; then go out and spread the thing. Warnings would be no use; people never paid any attention to warnings they could not understand. They would laugh at him; he could hear them

"Life from the stars, indeed! . . . Disease from afar—ha, ha!" They would call him mad—and then fall victims to the thing they derided. And the minute a few were affected nothing could stop it. He, himself, knew more about it than anyone else; but he had no idea how it could be checked

He wondered vaguely if he were infected. Perhaps not, in so short a time Well, he would be, before he got through.

He would have to work alone . . . Work?—he drew his hand across his eyes.—Work? . . . On what? Grimly he considered. He couldn't leave George, certainly. Must try to save him, no matter how small the chances; must study the Rays—try to find out

The Stain on the Wall

FROM below came a thud and a heavy pounding on the laboratory door. He shivered slightly.

What to do with George? Would have to keep him quiet. Frowning heavily, he descended the stairs. The racket in the laboratory was steadily increasing in volume. To the pounding was now added shrill, angry cries.

A hypodermic of some sort would be necessary for such noises would soon bring inquisitive people—and inquisitive people meant disaster. But how to get dope without a doctor? He knew of a doctor in the city who minded his own business; but deals like that required money, and he had no money Well, he had to do something right away. You could hear that howling a block.

He unlocked the door. As he turned the knob, the door burst open, knocking him violently backwards. Before he could regain his balance the other was upon him. As he was borne to the floor, all other emotions were dominated by his amazement at the homicidal tendencies of this man who, a week ago, had been as mild-mannered and studious as one could wish.

He fought vainly against the powerful, frenzied grip on his throat. Blood pounded in his ears; his temples throbbed. With his one free hand he reached along the floor for something that he knew was there. He found it,—the telephone—and, swinging it up, relentlessly clubbed the head of his assailant. The grip on his throat relaxed, and the body of George Dixon rolled over limply on the floor. Getting to his feet, he raised it in his arms; and slowly mounted the stairs. He laid it on the bed and bent over it. Out for three or four hours, he decided with relief. He needed at least that.

He searched methodically through the clothes in the closet, but found only a little over six dollars. A further search of the bureau netted only the check-book of a local bank. He stared at this latter find long and thoroughly; then shook his head. No, he would try searching the rest of the house first. An hour's search, however, brought no results; and at seven o'clock he was seated at a desk with the check-book and one of George's letters before him.

Promptly at nine he was at the local bank.

The young teller looked thoughtfully at the check he presented.

"Are you staying with Mr. Dixon, Mr.—Mr. . . . ?"

"Humboldt. Yes, I am."

"Well—it's a rather large—"

"If it is identification you want, I have a letter from Mr. Dixon to myself," said Humboldt brusquely.

The young man studied the proffered letter gravely. "All right, sir. You know we have to be careful, sir. How will you have it?"

Humboldt caught the nine-fifteen train to the city. He sat huddled in the corner of a car, feeling very tired and a little sick. He felt that he was on a fool's errand. George, he knew, could not be saved; it was only a question of how long he would live. Not very long, probably. A thing that can attack vital nerves kills quickly

Humboldt stirred uneasily in his seat. George's death, he reflected grimly, would not end the matter. Far from it! . . . There was enough substance in his body to feed the disease for weeks—months, perhaps. And throughout all that time the deadly radiations would continue—menacing all life, passing through all barriers

All barriers?—He remained deep in thought during the rest of the journey. By the time the Pennsylvania Station was reached, he had come to a decision.

An hour later—richer by a few grams of morphine and a syringe; poorer by a considerable sum of money—he was studying a classified telephone directory. Finding what he wanted, he called a number, and gave an order. There appeared to be some difficulty at the other end; and he spoke irritably:—

"Yes—lead. Can you hear me? Good! — Do you have one, or not? . . . Good! I want immediate delivery What? . . . I don't care what it costs Yes—this afternoon . . . Good! . . . Get a truck. I will pay all delivery charges . . ."

HE gave the address, and hung up. The journey back to Great Neck he spent in deep thought. How to study the Rays? How to make them tangible—measurable?

—An electroscope? Photographic plates?

He groaned in despair. All that was so arduous—so complicated; and he had need for speed. The Rays were spreading rapidly, he was certain; eating into the timbers of the house, into the ground, perhaps . . .

To his immense relief the house was quiet when he let himself in at the front door. He mounted the stairs on tip-toe, and cautiously unlocked the bedroom door. Caution left him, then; and for a moment he was overcome by nausea. Forcing himself, he approached, wide-eyed, the black lump on the bed. The head was bald, and the one ear that he could see was no more than a stump. The nose was a black wound in the ghastly face. The eyes were gone.

Fighting his disgust, he reached out a hand. The body felt like warm mud. He shuddered, and drew back No need for the hyp now—but he was glad he had got the other thing

His eye was caught by three ugly indentations in the skull. *His work . . .*

Horror surged up within him, and he dashed headlong from the room and down the stairs. He sank weakly into a chair in the living room. He was trembling; felt very tired—incapable of thought. He knew he had better get out of the house. Death was there. He imagined the Rays driving through the air about him. He felt that he could almost see them. They would be coming from many sources now—shooting in all directions

His head fell back upon the cushion of the chair. He knew he must get up, but he needed a little rest. His strength was exhausted Suddenly his eyes became intent. He had been gazing at the ceiling, but had not until now noticed the dark, irregular stain in its center.

He wondered about it. It alarmed him, somehow

What would cause such a stain? What was above this room? Feebly he concentrated on the problem. The stairs . . . the hall—to the right was—yes, George's bedroom! The Thing was lying there—yes, in the center right above the stain

He shivered. He would have to get out; but he needed a little rest. He relaxed

The stain had a peculiar shape. He decided that it had legs—a head—and one arm. He watched it steadily. It seemed to move a little . . .

Yes, it was moving! In sudden alarm, he struggled to rise; but could not. The one arm of the shape was stretching out towards him. He knew how it would feel—like warm mud . . . His terror was a physical pain, but he could not move.

Suddenly it was all around him—the warm mud. He was sinking in it, and could not breathe. Death was near, but help was coming. He could hear it—a small bell, very faint. Then a booming sound. He renewed his struggles—and suddenly was free . . .

Julius Humboldt opened his eyes, and leaped to his feet. Angrily he had been asleep. Now there was somebody at the front door—ringing, knocking. He would have to go, but it was a damned nuisance! He stepped into the hall. Certainly didn't want visitors. But maybe it was . . .

He started slightly as he swung open the door, and saw the policeman. He remained silent, collecting his wits . . .

"Mr. Dixon home?" rumbled the officer.

Julius Humboldt put out his hand, and grasped the door-post. He stood perfectly still, frowning. Then:

"No. He is not at home," he said.

"No?"—the officer's tone was peculiar—"Well, maybe you know something about this.—Is your name Humboldt?"

"Yes,"—Humboldt stared fixedly at the slip of paper. The officer shook it impatiently . . .

"Where'd you get this check?" he asked loudly.

"From Mr. Dixon."

"Yes?—Well, I wanna hear Dixon say that . . ." He took a step forward. Humboldt did not move.

"Mr. Dixon is not at home," he repeated.

One More Crime

THE officer growled. "Oh!—So you're gonna get hard, huh? You better be nice—get me? This here check is a phoney;

an' I got a good mind to take you along to the station now!" He eyed the other's shabby clothes with extreme disfavour.

"You know that you can do nothing of the sort," pointed out Humboldt calmly, "until you have found Mr. Dixon."

"Well, I'm gonna find 'im soon enough. An' now I'm gonna search this house." He made another forward movement. Still Humboldt did not move.

"You have a warrant?"—his voice was cold.

Again the policeman stopped and glowered. "Hard guy, ain't yu? — Well—"

He was interrupted by the sound of a heavy truck rumbling up the drive. He turned. "What do these guys want?"

Humboldt's lips tightened. "That is none of your affair!"

"No?—We'll see about that . . . Hey! What do you guys want?" He addressed the driver, who had by now climbed down from his seat.

The driver looked alarmed—then indignant. "Why, we got the coffin . . . We was to deliver it here—a lead coffin. An' damned heavy it—"

"Oh, a coffin!" the officer cut in. He swung around upon Humboldt. "Is *that* all? . . . Say there's something damned funny about this house . . ." He looked up and down, apparently including the entire house in his broad sneer. "We got a lot of complaints about noises in this house last night—screams like . . . An' now a coffin!"

Suddenly he swung around, and bellowed at the gaping truck driver. "Take that thing down to the station-house, an' leave it there. We don't have no funerals around here without the undertaker! And as for you—" he turned to Humboldt—"I'm comin' back — get me? . . . *With a warrant!*"

Suddenly he stopped, and gaped at the other. "What the hell have you got on your face?"

A chill shot through Humboldt. He stiffened. Then: "That, also, is none of your affair," he said softly.

The officer favored him with a look of concentrated venom. "All right, Wise Guy

—you wait!”—he stamped down the steps. Humboldt closed the door.

He walked very slowly, and with clenched fists, to a mirror. One glance was enough to tell him what he wanted to know, but he stared for a long time with a kind of fascination at his terrible face. Then he turned, and walked out of the house. He noted without surprise—scarcely with interest—that the grass, up against the front of the porch, was black—burnt-looking. He looked up at the window of George’s bedroom.

A maple tree grew near the house, and a large branch forked towards that window. The leaves were not green. They, too, were black and burnt-looking. Humboldt laughed harshly.

Study the Rays! Much chance he would have! You couldn’t study a thing that crumbled your body—stole your reason . . . Even his one little gesture had been thwarted, he thought bitterly. He had hoped to protect the world from George with a lead shield. And they had taken that . . .

He would be the second to go—but not the last. Perhaps the policeman would be the third. He would warn him . . .

Warn him! Again he laughed. He would say, “Don’t go into that house—warrant or no warrant. In there is invisible Death. I don’t know what it is. It comes from out of the skies.”

And the policeman would say, “Gettin’ funny, huh?”

But even if the policeman were convinced, and didn’t go in, the Rays would spread—through the grass, through the trees, through the ground. How much air could they traverse?

What were they? He called them “Rays”. He had made a word picture for them. But it was just a word picture—nothing more. This he knew: that they were *something* that fed on earthly substances—mainly living things, it seemed. How could you stop a thing like that . . . ?

He stiffened suddenly; his jaw set; and he strode swiftly to the road, and down the hill towards the town. He would try once more. He might beat the policeman to it. He smiled grimly. Thief, forger, buyer of

drugs, possibly murderer—he would try to beat the Law once again. He would commit one more crime—perhaps two . . .

Ten minutes brought him to a filling station. “Do you have any five-gallon tins?” he inquired of the attendant.

“Yes, sir!”

“Well, my car is out of gas—up in Mr. Dixon’s garage. I want you to fill two tins, and drive me up there.”

“Well, I can give you a gallon; and then you can stop by here, and—”

“Do what I say!” snapped Humboldt, “and don’t stand too near me.”

The other merely gaped at him.

“Get it!”—Humboldt threw a roll of bills at the attendant. The latter succeeded in mastering his astonishment.

“Yes, sir!” he cried. He filled the cans, and placed them in a rickety car. Humboldt got into the back seat.

“Go up the driveway, and set them down at the front,” he directed. The other pulled up before the front steps.

“Don’t you want them in the garage?” he objected.

“Do as I say,” said Humboldt again. The man deposited the cans on the steps, and prepared to go.

“Had a fire?” he inquired chattily, looking around at the grass.

Humboldt did not answer. He lifted one of the cans, and lugged it into the house. He heard the car rattle away.

From the kitchen, at the back of the house, he secured a dipper; and began methodically to scatter the liquid in all the rooms—on the floors, walls, ceilings, and furniture. He hurried, running from one room to another. His legs felt numb; he was a little dizzy; and then there was the policeman . . .

He went upstairs. In one of the rooms he found a closet, which had a tiny window looking out upon a grove of trees at the back of the house.

“Private in back,” he muttered, with an approving smile. Then he tried the key in the lock, and put it on the inside. He went on with this work. Upon the thing that had been George Dixon he poured a gallon of the fluid. Then he went downstairs and out of the house.

There was no one in sight. The grounds were fairly spacious, the nearest house being over three hundred yards away. Slowly he walked around the house, emptying his second tin on the walls and porches—on the grass. Lastly, he laid a little train of it out across the back yard.... It was getting dark.

He lighted a cigarette; and, stooping, dropped the match on the last little splotch of gasoline. A tiny flame shot up, and ran towards the house.

He walked slowly around to the front; and went in, locking the door behind him. He sat down on the staircase; and, reaching into his pocket, drew out the little bottle of morphine and the syringe. Might as well make use of it, after all, he thought with some satisfaction.

The sight of his hands sickened him: ugly, black—looked as if they might fall apart.... He charged the syringe from the bottle.

Perhaps he was saving other people from having hands like this. Deprived of food, this "life" or whatever it was from another

star, might die a natural death. Then again it might not. But the chances were that he was doing a whole lot of people a lot of good....

He dug the needle into his leg, and laughed. Anyway, he had nothing to lose! A fine hero!.... Julius Humboldt had always found it hard to be sentimental.... He got to his feet, and slowly climbed the stairs. It was difficult to move. He went into the closet, and lifted the tiny window. A roar and a wave of hot air greeted him. He drew back with a smile, and locked the closet door.

A tongue of flame shot up past the window, licking at the sill. He gazed at it admiringly. Wonderful stuff—fire!.... Clean.... pure.... vital.... Highest state of matter

The heat was choking him now. The roaring and the heat were now tremendous.... He laughed.

Robbery... forgery... murder... arson... and now, one more!

He tossed the key into the flame.

THE END.

For An Important
ANNOUNCEMENT

To All Readers

Turn To The Editorial

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Of This Issue

Between Dimensions

By J. E. Keith



(Illustration by Paul)

Almost instantly one of the tripods was above me; and the next moment I had been transferred to a basket beneath the cupola.

IN the autumn of 1942 I spent the month of October with Loren Rogers at his camp in northern Wisconsin. It was my first visit, although this invitation was a long standing one and only the press of work had kept me from taking advantage of it before. Loren had been my closest friend almost since childhood. We had been classmates in High School, took our engineering courses at the same university, and were together in the Chemical Warfare Division during the World War of 1936-38.

My name is Paul Dahn. I am a chemist by profession—perhaps I should say a retired chemist, since I spend little time in the laboratory these days—and my name may be not wholly unfamiliar to some of my readers. As the inventor of Dahnite I was at one time, until its usefulness was superseded by the new atomic explosives, fairly well known. I mention this simply because it may in some degree silence the inevitable accusation that I am merely another publicity seeker, spinning a wild yarn in the hope of grabbing a few moments in the limelight.

Loren had abandoned engineering for literature after the war—it is a pity that he instead of myself, could not have been the writer of this chronicle. At the time of my visit he was finishing a novel; in fact, that

was the reason he was staying on alone at the camp through the autumn. On my arrival he was all for throwing his typewriter out the window and declaring a general holiday. I had to threaten to pack up and

go home before I could get him to listen to reason, and we finally settled the argument by a compromise. He was to work on alternate days and play around with me only on in between. On his writing days I would amuse myself.

At that time rocket planes were just beginning to replace the old-fashioned propeller type machines. Loren had one of the first ones, a little two-seater amphibian. It was a pretty crude affair, judged by modern standards—it made the most ungodly racket you ever heard in your life, and its top speed was barely four hundred miles an hour. But at the time it was quite the latest thing out, and we were as keen about it as kids.

We spent most of our time in that fool machine, just gadding around the country. We went pretty nearly everywhere, our most ambitious attempt, I remember, being a jaunt out to San Francisco to see a Stanford-California game. It will make you smile,

I suppose, but in those days to go that far and come back, all in the same day, seemed not much short of miraculous. We got a great kick out of it. We would stagger out

THE wonders of time and space are just beginning to be appreciated in this fourth decade of the twentieth century. The Fitzgerald Contraction theories, the Einstein discoveries are awakening us to the astounding possibilities of changes in matter and unbelievable dimensional transformations.

We know that in our ordinary lives, we occupy space, and we move through time. We had once believed with the old classical physics that "no two bodies can occupy the same space at the same time." But we did not understand what the word "space" meant.

Modern physics has taught us that the "space" we occupy does not preclude another body occupying the same space. In fact we know that an almost infinite number of bodies may coexist with us in the same "space" but on different planes of existence.

Mr. Keith's astonishing dimensional story is not based on imaginative theories but on scientific principles. And he has given us a picture of other worlds that is so intriguing, so colorful, that one cannot but wish to change for a time his "space-time" position for that experienced by our author's characters.

of the old bus at the end of one of our crazy expeditions, stiff and sore from hours of cramped sitting, deafer than posts from the roar of the engines, and feel as proud of ourselves as though we had been to Mars and back. We had a grand time.

Then, along in the third week of my stay, I developed a toothache—a good lively one. The nearest village was only twenty miles away and undoubtedly supported a dentist competent to relieve my sufferings. But that, of course, was too prosaic a solution of the difficulty for my taste. Nothing would do but that I must take the plane and fly to Chicago to my own dentist. I started early the following morning. And as it happened to be one of Loren's work days I went alone.

THE early rocket engines were by no means as dependable as they have since become. No alloys had yet been developed that would stand the terrific temperatures generated, and the combustion chambers of Loren's plane were lined with fused quartz. After an indefinite period of use these quartz linings were given to cracking. They then rapidly broke up and were blown out of the rocket, whereupon the outer shell of steel promptly melted unless the fuel was immediately shut off.

As I have said, for nearly three weeks we had been flying the plane almost continuously and I now fell heir to all the trouble that had heretofore been impending. One after another the rockets conked out on me until only four out of twelve were left. I finally limped into the airport at Chicago on one third the plane's normal motive power. The repairs not only held me over until the next day, they were not completed until late afternoon, and although the return trip was uneventful I did not arrive until nearly sunset of the second day. I

had, of course, telephoned Loren immediately after reaching Chicago and told him not to expect me until the following day.

Our landing field was a small meadow about a hundred yards from Loren's cabin, which perched on the crest of the highest hill in the neighborhood. I can remember that even as I began to mount the path I had a presentiment of something wrong. I cannot explain it; but it came to me very powerfully, a feeling of apprehension and disquiet. Coming in the kitchen door the first thing that met my eye was Loren's Gordon setter, Horatius. The dog had crawled under the cook-stove. When I spoke he refused to obey, and when I finally lost patience and grabbed his collar and hauled

him out bodily he cowered trembling against my shins. He was obviously frightened, and badly frightened. I raised my voice and shouted, but I think even then I expected no answer. And I received none. The house was empty. Loren was gone.

His absence in itself was no cause for worry. But the state of the dog and my own nameless foreboding stimulated my imagination. When I had made a wide circuit through the forest about the house, hallooing

every moment or two, without result, I returned to the cabin oppressed by the conviction that something dreadful had happened. In the living room I caught a glimpse of my tense face in the mirror, and abruptly tried to snap out of it.

"You damned fool!" I told myself, "you're simply letting yourself be stampeded into a case of nerves. Nothing has happened. There's nothing that could happen. Stop being a silly ass. Loren is just out prowling around somewhere. He'll be back any minute."

I forced myself to sit down and resolutely took up a magazine, determined to be



J. E. KEITH

sensible. But at the end of an hour Loren had not appeared, and I determined to call the sheriff at the county seat and ask him to send out a search party. However, when I attempted to do so the telephone was dead. By this time daylight was gone, and I cursed myself for the delay. There was no way of getting help, now, until morning. I might possibly be able to take off in the plane, despite the darkness, but our meadow was the only landing place within miles and, on the return with a posse, to locate it from the air in the darkness was out of the question. The season had been abnormally dry and I dared not leave a fire for a beacon because of the danger of starting a forest fire. There seemed nothing to do except to wait for the dawn, hoping, meanwhile, that Loren would show up.

I again made a circle around the cabin without discovering anything. Then I prepared and ate a skimpy meal. Not that I was hungry, but it gave me something to do. After that there was nothing but the slow waiting for the long hours to drag themselves through. From time to time I went outside and yelled, but the starry vastness of the night gave back no reply. I was really alarmed then.

I tried to read, but I could not keep my attention on the printed page. I fiddled with the radio, but like the telephone it was dead. And over and above my worry about Loren, there was growing within me a nameless apprehension, a fear, a feeling that something—something horrible—impended. It was Horatius who made it impossible for me to shake it off. If I say it myself, I think I have my normal share of courage, and I know that I am not given to imagining dangers that do not exist. But the conduct of the dog definitely upset me.

He clung to my heels at every step and, when I sat down, insisted upon cowering at my feet. His tail never came out from between his legs; his whole attitude bespoke a deadly fear, and his fear communicated itself to me. Even after I had locked the doors and placed a rifle and pistol handy I found myself starting at each sudden noise from the night outside.

ABOUT eleven o'clock I threw myself down on the couch in the living room and, despite my anxiety and apprehension, went to sleep. I cannot explain it, for I was neither tired nor sleepy. Perhaps the light overhead, shining down into my wide-open eyes, had a slightly hypnotic effect. Anyway, I dozed off . . .

I awoke with a start. To my surprise, it was broad daylight. And to my still greater surprise, my watch gave the hour as a moment after twelve o'clock. I had the feeling of having slept only a short time, and it was inconceivable that I had actually slept until noon. Yet my timepiece was running, and I knew it to be an accurate and dependable one. I sat up abruptly and said, "What the devil?"

It was the sight of the dog that called my attention from this puzzle. The sun had dissipated my fears of the night before, but the moment my eye fell upon Horatius they returned with a rush. The dog was cringing in a corner of the room, trying, apparently, to crowd himself right through the intersection of the walls. His hackles had risen and his lips were drawn back from his teeth, but the sound that issued was neither a snarl of defiance nor a growl of anger; it was a whimper of deadly fear.

A shudder ran through me. The next moment I had leaped across the room and seized the rifle that leaned against the wall. I whirled about with the weapon in my hands, seeking the cause of the animal's terror. The movement brought one of the windows into my line of vision, and abruptly my momentary panic was displaced by the most profound shock of astonishment that any mortal ever experienced. For instead of the familiar rolling forest that should have been there, the window framed a vista of yellow sand, boulder dotted, and shimmering in the heat. Scattered at sparse intervals over the surface of this desert were clumps of unfamiliar trees. They looked a little like palms, but their size far outdistanced any palm I had ever seen. They towered two, three, even four hundred feet into the sky. When I opened the window a blast of heat like the breath of a furnace fanned my face.

I shall not try to describe my emotions for the simple reason that I did not have any. I was utterly numbed, mentally and physically. I must have stood there for a full minute or two, stupidly clutching the casement which I had flung open, until Horatius put up his nose and uttered a long mournful howl.

I turned around then and swore at him savagely. It seemed to make him feel better, for he gave me a look of recognition and did not howl again. He stayed, however, tight in his corner. I crossed to another window, looked out, and then stopped hesitantly in the middle of the room. I did not know what to do. It is significant, perhaps, that it never once entered my head that I might be dreaming. I knew that it was real.

I decided presently that my first move would be to reconnoiter. I went outside and walked around the cabin. The house itself was all intact, and I could discover no feature of it that seemed unfamiliar or showed evidence of change. It sat solidly on its foundation of logs; the ground around it was not marked by so much as a scratch; there was, in short, nothing, not one thing, about its exterior appearance to indicate that it had ever been moved an inch since the day it was erected. The landscape, on every side, was as I had seen it from the window. However, the cabin stood at the center of a shallow depression or bowl, and it was impossible to see more than half a mile in any direction. My next step, obviously, was to see what lay beyond the rim.

CHAPTER II.

A New World

I WENT back into the house and saw to arming myself. The gun I had brought out the evening before was an Aguchi carbine that Loren had picked up during the war and kept as a souvenir. Fitted with explosive ammunition it was an effective weapon, but I knew that Loren also had one of the new hydrogen rifles which had been put on the market only

a year or two before.—When I looked it was not in its accustomed place.

I searched the whole house thoroughly without discovering any trace of it, and my lack of success finally led me to the first coherent thought since my first awakening. The thing that had happened to me was so utterly impossible that I had not even tried to speculate about it. I did not try now. But it suddenly occurred to me that the same thing had happened to Loren, perhaps.

The obvious explanation of the rifle's disappearance was that he had taken it. He might even now be somewhere in the neighborhood. The effect of this train of thought was to cause me to dash out of doors and fire a fusillade of shots. I then brought out the pile of kindling that was stacked beside the kitchen stove, made a fire, smothered it with rags, and was rewarded by a thick column of smoke which ascended straight into the still air and must have been visible for many miles.

Satisfied that Loren would see it if he were anywhere near, I resumed my preparations for my scouting expedition. I changed my clothes—I still had on the sack suit I had worn on my trip to Chicago—loaded myself with pistol, rifle and ammunition, and as an afterthought dug out a canteen—another of Loren's souvenirs—and filled it at the water pail in the kitchen. I tried to persuade Horatius to accompany me, but he stubbornly refused to leave the house. I didn't blame him much; it was certainly cooler there. So I sallied forth alone.

One direction seemed as good as another. I spat on a pebble, tossed it in the air, and it came down pointing to the west. So west it was. The sand was loose underfoot and made the going slow, but at the end of a half an hour I panted up the last few feet of the slope and stood on the rim of the bowl. I was deeply disappointed at what I saw. No slightest sign of life greeted my eye save a flock of birds wheeling across the distant sky. I don't know just what I had expected to find, but I distinctly remember the feeling of depression that swept over me. From where I was the ground sloped away very gently toward the

west. For perhaps four or five miles it retained its desert character. Then the clumps of giant palms became more frequent and apparently merged at last into a dense forest or jungle, for the horizon, as far as I could see, was a waving shadow of green.

There was obviously nothing to be discovered by going farther in this direction. I did an about face and retraced my steps. After stopping at the cabin to jettison my pistol, which had gotten confoundedly heavy, I went on in an easterly direction. Coming over the edge of the depression I found myself on a level plain which ended abruptly a quarter of a mile away in a precipice. When at last I reached the edge I stopped and gasped in amazement. On my right and my left the cliff at my feet ran away in a straight line until it met the horizon. Its height was terrific; it fell away in a sheer descent for at least a mile. Before me was the sea—and what a sea! Blood-red in color, it stirred restlessly far below, a vast expanse of shimmering scarlet, unbroken as far as the eye could reach except for the tiny white streaks that were whitecaps close to the base of the precipice. Perhaps a mile down the coast, and about the same distance off-shore, was an island, a towering pile of rock whose precipitous sides soared into the sky almost to my own elevation.

The strangeness, the immensity, of the scene were absolutely crushing. I sank down beside a convenient boulder, which sheltered me from the sun's burning rays, and for almost an hour remained lost in wonder, drinking in every detail of the staggering vista that was spread before me. Then I got up, took a pull from my canteen, and began to walk along the edge of the cliff in the direction of the island. I wanted to get a look at it from the other side. The height was so great that I had no sensation of giddiness, and I walked very close to the brink, where the footing was more smooth.

I HAD covered about half a mile when it happened. I must have unwittingly stepped on a small round stone. Anyone

my feet suddenly shot out from under me, and the next thing I knew I had fallen across the edge of the cliff and was sliding outward. It occurred so quickly that I had no time to save myself. I made a single desperate clutch at the rim, and it failed. I did manage to get a half-hold with one hand, but my fingers slipped on the smooth rock. There followed a brief instant of suspense, the most horrible that I have ever known. Then I fell free and dropped like a plummet.

I imagine that I am the only human being who ever fell from a mile-high cliff and lived to tell about it, and it is regrettable that I cannot describe for your benefit my sensations in detail. But unfortunately I neglected to take any notes during my descent. I was, I suppose, so paralyzed by fright as to be in a substantially fainting condition. At any rate, I can remember nothing at all of the fall beyond the familiar "elevator feeling" in the pit of my stomach.

My first conscious and coherent memory, after slipping over the brink of the cliff, is of sprawling on a grassy sward, trembling in every limb, my heart in my mouth—but wholly unhurt. My immediate reaction to this miraculous escape from sudden death was to be violently sick. Then I staggered weakly to my feet and looked about me.

The towering precipice, the bloody vastness of the sea, were utterly vanished. In front of me was a rolling meadow with a tiny brook running through it. At my back was a park of noble trees. On the grass a few feet away lay my rifle. I picked it up and walked aimlessly away through the park. I was too dazed at what had happened to take any thought of what I was doing.

After a hundred yards or so I came to what was obviously a highway, paved with yellow brick. It was the first indication I had had of other men—or perhaps I should say intelligent beings—but I was not particularly surprised. I had got past the point of being surprised at anything. I turned into the road and followed it. I saw nothing at all unusual as I proceeded with the exception of small metal tablets which were set along the roadside at intervals of

about a quarter mile. They might have been mile posts but for the fact that they bore no inscription. A further peculiarity was that they all, when touched, gave forth a continuous musical note, the pitch being apparently the same in every case.

I had covered three or four miles before anything untoward occurred. Then, as I was approaching a bend in the road, a noise from ahead caused me to stop. I listened for a moment and then prudently stepped off to one side and concealed myself behind some bushes. A moment later a contraption appeared around the curve which I can only describe as a sort of mechanical centipede. It consisted of a flat platform perhaps ten by twenty feet in dimensions supported upon a great number—at least thirty or forty—jointed legs.

No driver was visible, nor, as far as I could discern, was there any source of motive power, but the device nevertheless trotted past me at a speed of about thirty miles an hour, keeping squarely in the middle of the road. Piled upon the platform was a load of metal cylinders, which looked a little like elongated ash cans. I remained hidden for a few minutes after it had disappeared, and then continued my journey in the direction from which it had come. My curiosity had been whetted and I increased my pace.

About a mile farther on a second of these extraordinary motor trucks caused me to scuttle hurriedly into the underbrush. A third and a fourth soon followed, and then came a convoy of more than a dozen. I abandoned the highway entirely and made my way through the woods paralleling it. But when a little later I came out on a modest hilltop I discovered that the road before me stretched away through the forest in a straight line for as far as I could see. Somewhat disappointed I again took to the bricks, and went on.

The Mystery of the Lake

I MET nothing more. In time I began to feel tired. I had been walking steadily for four or five hours and covered a distance of probably fifteen miles. The road

seemed to be getting nowhere. It ran on interminably; and there was not even a change of surroundings. For miles after mile on either side there remained the same open forest. But there came a time at last when I saw far ahead of me, framed between the trees, the blue sheen of water. I redoubled my pace and presently came out on the shores of a good-sized lake. The road ended here. Or rather, it ran right right into the lake.

I sat down. There seemed to be nothing else to do. It was not unpleasant there. The sun sparkled on the surface of the lake, and a cool little wind blew across it. The temperature, I should perhaps mention, was equable—much lower than in the desert on which I had first found myself. I might also mention a curious circumstance which I now noticed for the first time. Although six hours had passed since I first came upon the yellow road the sun had remained stationary in the sky. I could not perceive that it had moved a particle.

As I sat there a deep resonant sound came from the depths of the lake and repeated itself several times. It sounded not unlike a dinner bell and reminded me that I had not eaten for some ten hours. I had come upon no sign of game, had seen no living creature in fact except a few birds, and those at a great distance. I got up and began to snoop about in the hope of finding edible berries or fruits. My search was unrewarded and after a few minutes I gave it up and returned to the point where the road entered the lake. I then discovered that another machine had appeared. It differed from those I had seen previously. It was much smaller, for one thing, its dimensions being about the same as those of a piano.

It consisted of an open framework surrounding an exceedingly complicated mechanism, the whole moving about on four legs affixed at the corners. When I came closer I discovered that it was engaged in repairing the road. By this time my curiosity had got the better of my caution and I approached until I was almost close enough to touch it. It worked on steadily, quite heedless of my presence, ripping up row after row of bricks, spreading cement, and relaying

them. I was fascinated, but after only a few brief moments it apparently finished its job. Then, to my astonishment, it waddled straight out into the lake and in a moment was completely submerged. For some time it remained visible through the clear water, steadily descending lower and lower, until at last it disappeared.

One puzzle was solved. It was now apparent that the unusual termination of the yellow road was not an accident. It did not end at the lake, but *in* it. Somewhere in those depths there must be a colony of intelligent beings, the proprietors of the machines I had seen. It suddenly occurred to me that possibly the walking platforms I had met on the road were a sort of motor bus. Perhaps each of the cylinders they carried was filled with water and contained a living creature in the act of being transported to another lake or river.

A thousand questions thronged my mind, but after a moment I resolutely set them aside. The really important question was: when did I eat? I was hungry. I was, in fact, very hungry, and I had not the slightest idea where my dinner was coming from. I had not given much thought to the matter before, but I now saw that my situation might be serious. As I have mentioned, I had seen no game, nor anything else of an edible nature. The problem of food would soon be an important one.

But at this moment, happening to glance up the road, my eye fell upon one of the moving platforms. It was only a couple of hundred yards away, coming toward me, and was loaded in the same manner as those I had seen earlier. In the brief time before it reached me my decision was made. I was going to have a look at what those cylinders contained!

AS I had hoped, when the machine came near to the water's edge, it slowed down, and as it went by I managed to poke one of the cylinders free with my rifle. It rolled off onto the beach. It was about two feet in diameter, and when I had stood it upright it came to my shoulder. But the cover would not come off. I struggled unsuccessfully with it for several minutes and

then stopped to rest. As I was about to make a second attack the difficulty was unexpectedly solved. A loud buzzing sound from the interior of the cylinder caused me to jump back in alarm. The cover began to move. It revolved rapidly for a few seconds and then fell off. I slipped the safety of my rifle, approached cautiously, and peered over the edge.

I do not know just what I expected to see—a fish of some sort, perhaps, or an octopus—but what I did see was nothing at all. Disgusted, I gave it a push. It toppled over at the lake's margin and the water gushed forth. But the next instant there was a terrific thrashing in the shallows, and a second later my pop-eyed gaze detected a disturbance of the sandy bottom as an invisible something darted out towards the depths.

I prudently retreated to a point some fifty yards from the water and there waited for fifteen or twenty minutes, watching the surface of the lake intently. But nothing appeared, and I presently decided that it was high time I began a serious search for food. I set off toward the west, skirting the shore of the lake but keeping well back from it. It seemed to me just as well to be in a position to beat an unnoticed retreat if the denizens of the lake showed signs of disapproving of my presence.

I had covered only about a quarter of a mile when I came upon a battery of squat masonry towers dotting the wooded hillside which sloped up from the water's edge. They were about fifteen feet in diameter but only eight or ten feet tall, and I counted twenty-six of them altogether. I decided that they were ventilators. A leafy branch held over the top of one of them disclosed that a strong current of air was entering. Whether they communicated with underground chambers directly beneath, or whether the air was conveyed to the center of the lake, I had, of course, no way of determining.

I found an old letter in one of my pockets and brought it forth with the idea of writing or drawing a message on it and tossing it into one of the ventilators. The lack of a pencil forced me to abandon this project. So, instead, I folded the bit of paper

into an "airplane" of the type known to every schoolboy and, with a grin, tossed it into the air above one of the towers and saw it snatched out of sight by the draft. I have often wondered since if my underwater friends ever found that toy, and if they did what they made of it.

A few hundred yards from this spot I found my first food in the shape of an extensive patch of gourd-like vegetables, apparently growing wild. They were inedible raw, but when I had built a fire and roasted some I found them very good, with a flavor not unlike that of squash. I stuffed myself full. Then, being dead tired, and at no time having seen any sign of dangerous animals, I lay down beside my fire and went to sleep. When I awoke ten hours later I felt like a new man.

CHAPTER III.

The City of Machines

I STAYED in this vicinity two days. I say two days—by that I mean forty-eight hours as measured by my watch. Actually, daylight was continuous, the movement of the sun being just barely perceptible. I estimated that at least 30 normal days must be required for it to pass across the sky once.

My reason for remaining here was that I had not given up hope of establishing communication with the inhabitants of the lake. They, however, apparently had no desire for a closer acquaintance, for during this time they lay absolutely doggo. No more machines appeared, and nothing happened to indicate that these queer transparent fish—or whatever they were—so much as existed. There was not much that I could do about getting in touch with them. I threw stones into the lake for half an hour once, and another time I yelled down one of the ventilating towers until I was hoarse, but neither action brought any result. I finally came to feel that I ought to be moving on.

About ten miles distant to the south I could see a range of high hills, and I resolved to see what lay beyond them. I made

my simple preparations for the journey, chiefly the roasting of a number of squashes and stringing them on a length of vine, and then lay down for a nap before starting out.

But something far different was in store for me. I awakened out of a troubled sleep with difficulty, remaining for what seemed like a long time in a semi-conscious state, vaguely aware that all was not well, yet wholly unable to assemble these misty apprehensions into anything coherent. My first clearly defined sensation was a sudden realization that I was moving. The shock of this understanding cleared my brain and I opened my eyes.

I discovered, then, that I was a passenger on one of the walking platforms. It carried a load of the metal cans I have previously described, on top of which I was sprawled, and was moving along a yellow road which had every appearance of being the one I had travelled. When I attempted to move I found that from the neck down I was paralyzed. I was able to move my head, but that was all.

What had happened to me was at once perfectly clear. I had been drugged while I slept.

My sensations may be imagined. The vast majority of men are capable, I believe, of facing any imminent visible danger very creditably; the crisis produces in most of us rather a pleasurable excitement than fear. But an invisible threat is something else again. And when the unknown menace must be awaited in a condition of utter physical helplessness one may, I trust, be forgiven a slight uneasiness not far removed from fear. I freely admit, I put in a very bad half hour.

I was probably saved from complete funk by my acute physical discomfort. The paralysis affected the motor nerves only, the sensory nerves being uninfluenced, and I was acutely aware that in a literal as well as a figurative sense I was lying on no bed of roses. A dozen sharp corners and projections dug into my helpless body, and since I was unable to make the slightest move the irritation came in time to be really torturing.

Fortunately neither the pain nor the suspense lasted long. We had been travelling, evidently, for some time before my awakening for at a second glance I noticed that the forest beside the road was distinctly more open than I remembered it. Presently the trees gave out entirely and we emerged on an open plain. The position in which I lay was such that I could not see in the direction in which we were moving. I could note only the level pampas flowing past on either side and the steady recession of the forest from which we had emerged.

Then, after about twenty minutes we suddenly came to a halt. Turning my head I now saw that we stood outside a low white wall. A moment later we passed through a gate, which closed behind us. My conveyance swung about, and I let out an involuntary gasp of astonishment as I saw what lay before me.

IMAGINE if you can an enormous manufacturing plant set up under the open sky, and running full blast without a living soul in sight. The white wall enclosed a space about half a mile square. This was paved with the same yellow bricks of which the road was composed. Except for aisles or streets which ran between, the entire space was covered by machines. I could see the whole clearly from my elevation on top of the load. The machines were of almost infinite size and variety, similar ones being apparently grouped together in batteries. They were almost all in operation; their clanking filled the ears. Yet not a single living creature was to be seen!

I then noticed, in the aisles between the stationary mechanisms, several types of mobile machines. The largest and most conspicuous was a sort of animated tripod about ten feet in height. The three legs supported a cupola from which extended four long, jointed arms, terminating, respectively, in a hook, a suction disk, a four-fingered hand and a flat disc, which I later learned was an exceedingly powerful electro-magnet. These devices trotted busily back and forth, apparently acting as tenders to the other machines.

I saw all this while my conveyance was

moving rapidly down an aisle that ran parallel to the wall. It turned a corner, ran a few yards farther and stopped. Almost instantly one of the tripods was above me, and the next moment I had been transferred to a basket underneath its cupola. My meagre possessions, which I had not missed nor thought of, followed—my rifle, canteen, my string of roasted squashes—even a shovelful of the blackened embers of my fire.

From this vantage point I now witnessed the disposition of the rest of the load. The platform tilted, the cans rolled off and were picked up by a conveyor belt which carried them into the nearest machine, a large, enclosed, box-like device. Thirty seconds later the first of the empty cans was suddenly discharged and clattered out onto the pavement, and at the same moment the conveyor emerged from the opposite end of the machine, bearing its erstwhile occupant.

I looked with pop-eyed curiosity at a sort of worm, or snake, about six feet in length, transparent, but clearly visible in outline. Then in an instant my eager curiosity changed to astonished dismay. For it had been neatly chopped into six still wriggling pieces.

Until this moment I had supposed that the creatures from the lake were intelligent beings, the proprietors of the machines. Now the appalling truth was made plain. The machines were the masters! I was in a city of machines!

The chopped pieces of the water snake disappeared within the maw of the next machine in the line. I watched, utterly helpless to move a finger, waiting in an agony of apprehension until the last can had been unloaded. But my worst fear was not to be realized—at least not yet. The tripod under which I was slung loaded the empties back onto the platform. It moved off. Then we set out rapidly in the opposite direction.

That journey across the city—we went clear to the opposite side—was, despite the fear of imminent death that hung above me, an enthralling experience. My trepidation, an excusable one, I hope, could not quench

my curiosity, and I eagerly drank in every detail that met my eye.

I tried ceaselessly to guess the function of the machines we passed in endless variety, but without much success. Some of them were obviously manufacturing metal parts for other machines. Some were producing the metals themselves. Others were quite clearly electrical devices of one sort or another. But with most it was impossible to even guess at their purpose.

The tripod machines, like the one that carried me, interested me most. We must have encountered fifty of them, and it was plain that they directed the others. I examined my own closely, but without gaining any information except as to externals. The operating mechanism was hidden in the cupola above me.

Another Amazing Experience

WE stopped finally beside a long narrow box, perhaps eighty feet in length and open at both ends, through which ran a conveyor, moving very slowly. When one of the arms reached into the basket, removed the articles with me and placed them on the belt I conjectured that this was some sort of examining device, and when I was treated in the same manner I felt only a slight uneasiness.

My guess proved to be correct. I passed slowly through, under a brilliant illumination, without anything untoward happening until, just before the end, half a dozen sharp augers suddenly bored into different parts of my body, for the purpose, I suppose, of taking samples. A moment later I emerged in the open, bleeding freely from the wounds but not hurt at all seriously.

I was then carried to a wire cage only a few yards distant and deposited therein, along with my rifle and canteen and the charcoal from my fire.

My first thought, of course, was of escape. It seemed to me that the paralysis was wearing off, and this proved to be the case. I was able to move my hands and feet within an hour, although a considerably longer time elapsed before I regained complete control over my muscles. The wire

offered no difficulty—I could break the strands by using my rifle as a lever—and the wall was only some fifty feet away. Once over it I would be out of sight, but the problem of crossing the open space without being observed seemed insoluble. I formed and discarded a dozen impossible schemes and finally, driven to desperation by the knowledge that at any moment the opportunity might be ended for ever, I simply made a dash for it, choosing a moment when none of the tripod machines were near.

To this day I cannot imagine why I was not stopped. The machines must have seen me, if they had sight, as I am sure they had. Perhaps their analysis had showed that, unlike the water snake, I was of no use to them. At any rate, no effort was made to halt me. The wall was only about eight feet high and with my rifle slung on my back I scrambled to the top without difficulty. To my horror I then discovered that, due to the fact the land sloped away in this direction, the ground outside the wall on this side was fifty feet below the top.

My despair can be imagined. I expected every instant to be apprehended and recaptured. After a moment of frenzied search for some other way out, a fit of sudden desperation descended upon me and I resolved to jump, risking almost certain injury or death rather than return. I hastily unslung my rifle and tossed it free. To my astonishment it never reached the ground. It fell sheer down for forty feet and then disappeared in thin air.

At such a moment the mind works rapidly, if it works at all. Ever since falling from the cliff I had been searching off and on for some explanation of my miraculous escape from death, and instantaneous transportation to a totally different environment. Now, in a flash, it suddenly came to me.

Apparently, in this outlandish world in which I had found myself matter possessed the ability to change its location in three dimensional space by passing through a fourth dimension the existence of which was invisible to the senses. I had on two occasions, now, seen this property demonstrated by falling bodies, and I conjectured that the active agent in producing the phe-

nomenon was the velocity imparted to the falling object by gravity.

The idea passed through my brain in a fraction of the time it takes to tell it. I threw the canteen after the rifle. It likewise disappeared before striking the ground. Without a moment's hesitation I then leaped after them.

The sensation of falling lasted but an instant. The next, I was sprawling on a rocky surface, and when I raised my eyes they fell upon a scene that was familiar. Behind me was the desert. Before me, and only a few feet away, the stupendous precipice fell away to the crimson sea. The rifle and canteen lay on the rock beside me.

WHEN I looked about me I noticed that while my surroundings were in a general way familiar, their details were not. For example, the rocky island off the coast was nowhere to be seen. It was thus clear that I had not returned to the exact spot of my fall from the cliff, this being evidently due to the fact that the city of machines was several miles removed from the meadow in which I found myself after that first tumble. But I hoped that by following the coast I might return to the cabin. Unfortunately, I had no idea which way to go, and in the end I was forced to make an arbitrary choice and trust to luck that it was the correct one.

The heat was terrific, and I was by no means sure that my strength was equal to a march of many miles. But that chance had to be taken. My canteen was full of water; I was only slightly hungry; and if the distance did not exceed thirty or forty miles I felt that I had at least a chance of success.

Just before I started an idea occurred to me. Unslinging my rifle I pointed it toward the ground and pulled the trigger. As I had expected, the rock showed no mark of the bullet. The projectile had been translated into the fourth dimension before it reached the muzzle of the gun. After firing several rounds with the same result I tossed the weapon aside. It was useless, and there was no sense in encumbering myself with its weight. Then I set out.

The journey that followed will always remain in my memory as the most gruelling experience of my life. I suffered horribly from the heat. The sun was pitiless, beating down upon me, hour after hour, with a blasting malevolence that seemed almost personal. My water gave out, and before the finish I had experienced all but the final agonies of death of thirst.

But these details do not matter. It is enough to record that I had been fortunate enough to choose the proper direction. I have no idea how far, or for how long a time, I plodded mechanically on. It seemed a veritable eternity. But in the end, after many hours and many miles, I saw far ahead the towering shaft of the island soaring up out of the sea. Ages later I came abreast of it, passed it. When I had put it a mile behind me I turned away from the sea. I was so near to the point of utter exhaustion that when I finally stumbled over the rim of the bowl in the desert, only to find no sign of the cabin, I collapsed from sheer disappointment. I tried twice to regain my feet, but without success. Then I must have fainted.

* * * *

When I woke I was lying in the shade of one of the giant palms, and Loren was seated beside me. I shall not try to describe the overwhelming relief and happiness that swept over me, and I am sure that he was equally glad to see me. I had slept like a log for nearly twenty hours and felt better than I would have believed possible. We fell at once to an eager questioning of each other that served only to bewilder us both, and finally we burst into simultaneous laughter at our mutual puzzlement. Then, more sensibly, each gave a coherent account of what had befallen him.

Loren's experience had been less eventful than my own, although the manner in which both began was identical. The night I was in Chicago he had been awakened at midnight to find it broad daylight, and himself and the cabin set down in the midst of the desert. His first act, naturally, was to explore the surrounding territory. And on his return six or seven hours later he found,

to his astonishment and dismay, that the house had vanished.

During the next two days he suffered much from hunger and thirst, until he tried the expedient of tapping one of the giant palms. A copious flow of yellow fluid rewarded him, which served excellently for both food and drink. He had lived on it ever since.

He remained in the neighborhood, and on the fifth day—by his watch, of course—he saw my signal smoke from a point two or three miles distant. Hastening back he found the cabin and my signal fire. This, together with my clothes scattered about inside, and the disappearance of the Aguchi rifle, told him of my presence.

He fired a number of shots and added a second smoke to the one I had left. Since at that time I had already tumbled off the cliff his efforts to attract my attention were naturally a failure. Then, two or three hours after his return, while he was outside tending the fire, the cabin had vanished before his very eyes.

This utterly crazy series of events had left him with some doubt as to his sanity. He had spent most of the time since frantically searching the neighborhood for me.

CHAPTER IV.

The Monster of Dimensions

AS we compared our stories I think the idea occurred to us both at the same moment. Apparently the cabin had been hopping back and forth between its rightful location in the Wisconsin woods and the outlandish spot in which we now were. If it again returned we had only to stay inside it to be rescued from the nightmare in which we had found ourselves. The whole thing was so fantastically impossible as to forestall even an attempt at explanation, but the detail that puzzled us most was the discrepancy in time. Although only twenty-four hours had elapsed between Loren's projection into the unknown and my own identical experience, he was five days in the desert before I arrived. The only possible explanation seemed to be that in the place

where we now were time itself was different than in our own natural world; but as to the reason for this difference we could not even hazard a guess.

After a series of hasty calculations we decided that, as nearly as we could determine, an interval of five days had separated the first and second appearance of the cabin in the desert. It had remained for about five hours in both cases, and then vanished. If it returned again, and came on schedule, it was due to appear in about fifteen hours.

We settled ourselves to wait. And fortunately for our patience, our calculations proved to have been in error. It was less than ten hours later that I was roused out of a doze by Loren, who was on watch. He let out a wild yell: "There she is!"

And sure enough, there she was.

We raced each other to the door. Inside, everything was quite as we had left it. Horatius scrambled up to greet us as we burst in. He was obviously overjoyed to see us and seemed much less frightened than on the previous occasion. Evidently he was getting accustomed to it. He was a very hungry and thirsty dog and our first act was to care for his wants. Then we raided the cupboard and had our first taste of civilized food in many days.

After that there was nothing to do but wait. We played cards to pass the time until the tension became too great. Then we merely sat and figeted.

Once the four hour-mark had been passed the suspense became almost unbearable. The clock on the mantel ticked off the minutes slowly. Oh, so slowly. Four hours and a quarter. Four hours and a half. Four and three quarters. At that we could stand it no longer. We got up and began to pace the floor like caged animals. A moment later, as he passed one of the windows, Loren stopped suddenly. Then he cried excitedly, "My God, Paul, what's that?"

I leaped to his side, and my eye followed his pointing finger. For a moment I could perceive nothing. Then I saw what he was pointing at and a chill ran down my spine.

Neither Loren nor myself had at any time

seen a living creature, with the exception of a few birds and my transparent water snakes. I am convinced that this was not because no animals existed, but because all, or nearly all, forms of animal life were invisible. The thing that had attracted Loren's attention was the astonishing appearance in the sand outside the house of a double row of shallow depressions about the size of dinner plates.

As we watched new ones were added to each row. The phenomenon was baffling to Loren, but my memory of invisible aquatic creatures caused me to guess instantly that the depressions in the sand were the footprints of an invisible animal. The beast was six-legged, and from its spoor of enormous size.

I grabbed Loren's arm and jerked him aside. But too late. The beast must have seen him. There was a blood-curdling snarl from without, and the next instant the window glass crashed as the creature hurled himself at the opening.

FORGETTING that it was useless, Loren leaped across the room for his rifle. I dashed toward the kitchen in the wild hope of laying hands on a knife. It was just as I crossed the threshold that the event which we had been awaiting came. Darkness snuffed out the sun. For a second or two I blundered frantically about the pitch dark kitchen, upset as much by the sudden darkness as by the danger from the animal.

Loren's nerve was better. I heard the shrill scream of his hydroxigen rifle as he emptied its magazine. Then in a flash I understood what had happened. I leaped into the living room, yanked Loren through the kitchen doorway and slammed the door behind us.

Through the window we could see the moon shining behind the trees. The familiar hillside sloped away, and at the bottom in the meadow the plane gleamed in the moonlight, precisely where I had left it. There was no need for speech. Without a word Loren flung open the outer door. We dashed down the path as though the devil himself were at our heels. Loren scrambled into the cockpit and started the engines,

while I threw off the anchor lashings. A moment later we roared into the air, to the accompaniment of a pair of gigantic sighs of relief. At last, at last we were safe.

We spent the night in a hotel in a city two hundred miles away. But next morning, made bold by daylight, we armed ourselves and returned. We approached the cabin with all due circumspection, but our caution was unnecessary. The beast that had attacked us was sprawled on the living room floor, stone dead. Loren's rifle had become effective the instant the cabin returned to its original site, and three of his shots had done their work. Horatius, whom we had basely abandoned in our flight, had mounted guard over the trophy. He seemed quite proud of himself, giving us clearly to understand that *he* had done it himself, despite our cowardly desertion.

Dead, the animal was no longer invisible. It was about the size of a horse, slate grey in color, and hairless. Its six feet were padded like those of a lion, but the head was decidedly porcine. In fact, the creature more nearly resembled a gigantic six-legged hog than anything else.

Neither of us cared to venture inside the house, so we contented ourselves with standing outside and looking in through the broken window. As we stood there Loren said, "Say, you know it's rather a lucky thing this fellow came busting in on us, at that. He's the only proof we have of our story. Without him we'd never in the world get anyone to believe a word of it. The thing for us to do is to get some witnesses up here right away.

"Wait a minute," I said. "How about the cabin itself. I should imagine that the most skeptical would be convinced if they saw it vanish into thin air. At least I suppose it vanishes. It certainly can't be in both places at the same time."

"You're right, of course," he admitted. "I'd forgotten all about the cabin. But to tell you the truth, when I look at it in broad daylight I have a hard time convincing myself that it all really happened. Maybe it didn't. Maybe we've just been seeing things."

I pointed to the dead animal. "That's

real enough, I guess. My idea," I added, "would be to hang around here until midnight tonight and see what actually takes place. Then tomorrow we'll call in the reporters."

We called the dog, went down to the plane and flew to the county seat. We had dinner there that night, and came back just before sunset. We did not go near the house, remaining in the meadow beside the plane. When the moon came up the cabin was clearly visible from where we were, and neither of us had any inclination to be included in the performance if the cabin repeated its previous tricks. The night was chill, and we built a fire for comfort. During the hours of waiting it occurred to me that we might just as well have built it on the far side of the meadow, a few hundred yards farther away.

A Sudden Discovery

BUT my nervousness was uncalled for, since we were at no time endangered. At precisely two minutes past twelve, as we had expected, the cabin vanished. That was all there was to it. No noise, no disturbance, nothing. Simply that one moment it was there and the next it was gone.

Loren suggested that we ought to go closer and see what was left, but I argued against the proposition so brilliantly that he was convinced. I was plenty close enough, right there.

At fifteen minutes after twelve a bright fire lighted up the horizon toward the northeast. It burned brightly for half an hour and then died out. And that ended the program for the night. Nothing more happened. At daybreak the cabin had not returned. At nightfall it was still missing. We came back the next day, and the next. We camped for a week in the meadow, where we could watch the spot day and night. But of the cabin there was no sign. It did not come back . . . It never has come back.

We did not call in the reporters. We did not call in anyone.

"Listen," Loren said, "this is our little secret, understand? Strictly between you and me. I've been accused of a lot of

things, but I draw the line at being pointed out as a hop-head. If I can help it they're not going to have my picture in the papers with the caption: Winner Of Champion Liar Contest."

He really meant it. He was so serious about it that in the end I promised. There were times later when I regretted giving my word, for in after years I knew men with whom I would have liked to discuss the matter. But I kept my promise. I never told a soul.

* * * *

That was nearly thirty years ago. Loren has been gone, now, for more than a decade, but the habit of secrecy kept me silent even after his death. Together, we must have thrashed out the affair a thousand times, but we never arrived at an explanation that was in any degree plausible. To the day of Loren's death, and long afterward, the mystery remained wholly insoluble.

It was about a month ago that I at last stumbled on a clue. I had dined with my friend George Du Cles, the physicist, and during the conversation afterward we got to talking about the new Augsberg Theory, of which most of my readers have probably heard since it achieved widespread publicity in the press. One of the less important details of the theory relates to the Fitzgerald contraction.

But perhaps I might explain briefly.

About 1910 Fitzgerald discovered that a moving body is shortened along the line of motion, and the phenomenon has since borne his name. At low velocities the Fitzgerald contraction is very small. At a speed of nineteen miles a second, the velocity of the earth around the sun, it amounts to only 1 part in 200,000,000, or $2\frac{1}{2}$ inches in the diameter of the earth. But at higher velocities the contraction is much greater, increasing quite quickly.

A bar measuring six feet in length when at rest would be shortened to three feet at a speed of 160,000 miles a second if its length coincided with the direction in which it was travelling. If turned at right angles to this direction its length would again become six feet while its thickness would be

halved, the contraction taking place only along the line of motion. At 186,000 miles a second, the velocity of light, the Fitzgerald contraction becomes infinite; that is, the length of a body moving at this speed would be reduced to zero.

It has always been held to be utterly impossible that a material body could ever be given any such velocity, but now Augsberg has demonstrated that that when an object vibrates at very high frequencies its motion backward and forward along the same line produces the Fitzgerald contraction just as though it were moving in one direction only. He has proved that it is at least theoretically possible to produce in this manner an infinite Fitzgerald contraction, the frequency required being in the neighborhood of 12,000,000,000 billion vibrations per second.

“YOU know,” Du Cles remarked, “it has just occurred to me recently that so far as this phase of the theory is concerned Leon Scanlon anticipated Augsberg by 30 years. Do you remember him? We were together at the University. He was assistant to the head of the department and had already begun to make a name for himself. This was a good many years ago. Around 1940.

“No? Well, I never saw Scanlon’s mathematical proofs, but I can remember the talk about Scanlon’s ideas in the department. They were identical with Augsberg’s. He never published. He had worked out a method for testing his theory and he wanted practical proof before making it public. He had, I recall, a lot of trouble getting financial backing for his experiments, the big difficulty being that he required an enormous amount of electrical power—four or five million horsepower, if I remember correctly.

“Finally he got Sharps, the utility magnate interested. Sharps controlled most of the power companies in the Middle West. He put up the money and arranged matters so that Scanlon could get the current he required. Scanlon went up north somewhere—Minnesota or Wisconsin, I believe—and built himself a laboratory. About a

year later it burned, and he was killed in the fire. I paid little attention to it at the time, but it seems fairly certain now that Scanlon was on the trail of something worthwhile. It is a pity he couldn’t have lived and had the credit for the discovery.”

It was a couple of days after this conversation that a great white light suddenly burst upon me. Investigation disclosed that the fire that destroyed Scanlon’s laboratory had occurred on the same night that saw the final disappearance of Loren’s cabin. A few days later I took time to make a trip north. I found, as I had expected, that the ruins of the laboratory were only half a dozen miles from the site of Loren’s camp. His choice of this isolated location had evidently been due to the fact that it was the intersection of three cross-state trunk power lines. It was undoubtedly this fire that Loren and I had seen that night.

These facts at last enabled me to form an explanation of the puzzle that had gone unsolved for 30 years. I think I know now pretty much what happened.

As I may have mentioned previously, Loren’s cabin stood on top of a hill, the highest in several miles. Scanlon’s apparatus must have produced a beam of some sort which, either by accident or design, was so pointed that it just grazed the top of the hill before passing out into space. The beam had the property of causing objects that it encountered to vibrate at such an enormous frequency as to produce in these objects an infinite Fitzgerald contraction. The cabin and its contents were, of course, thus affected.

Now an object to which this happened would not be destroyed; it would still remain a real, material body. But—it would no longer have three dimensions, but only two.

Now it is obviously impossible for a two-dimensional object to exist in a three-dimensional world, and I believe that the cabin was instantly translated into a part of the universe where it is possible for a two-dimensional body to exist. As to just how the act of transportation was accomplished I have no idea, but it must have in-

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Beyond the Star Curtain

By Garth Bentley



(Illustration by Marchioni)

The creature was huge. The two great forearms were hugged close to the breast, folded up in a perfect attitude of prayer.

THROUGH the velvet darkness of interstellar space sped the ovoid vessel, its gigantic bulk hurtling, with almost inconceivable speed, toward the cloud-wrapped earth. The space ship—for such it was—seemed a veritable comet as it entered the boundaries of the solar system, gliding through the emptiness on the wings of its own accumulated momentum. Yet, large though it was, its bulk was dwarfed by the majesty of the huge planets of the outer ring, which illumined the blackness.

As it neared its destination, a series of quick, soundless explosions came from the tubes in the bow of the ship. Great streams of flame shot out into space, checking the momentum of the craft by the recoil of the explosions. It entered the upper air of the earth at a wide angle, the tubes spitting an unceasing cannonade. The outer hull—a thick alloy of beryllium steel and chromium—began to glow dully as it heated from the friction of the air.

Eventually the craft slowed its headlong pace and settled into a regular orbit about the planet. Many times it circled the giant ball in an ever-decreasing orbit as the speed gradually lessened. The glow faded from the outer shell, and at last it plunged through the thick, concealing bank of clouds into the lower regions of the atmosphere, sink-

Beyond the Star Curtain

By the author of
"Rebellion 5000 A.D."

MANY of the diminutive forms of insect life that we look upon with indulgent interest, are in reality extremely powerful and dangerous. They possess qualities for destruction, and powers that would far exceed the ability of man to cope with them, were they grown to a size comparable to man. The fly, the mosquito, the supremely efficient ant and bee are much more fitted for survival than man, and only their small size prevents them from becoming a deadly menace.

Probably a change in climate and in some of the evolutionary forces might serve to accelerate the growth of the insect kingdom, and they would attempt to achieve dominance over the earth. In this struggle, the insects would have the tremendous power of their instincts, their fighting ability and fearlessness against which man would have but his supple intelligence and cunning.

Which might win, we have no means of telling, but in this gripping tale, Mr. Bentley pictures the situation vividly and fairly.

ing at last to rest on the earth's surface.

Inside the great egg-shaped ship, two men leisurely unstrapped themselves from the stout hammocks where they had lain since the deceleration of the ship's speed had begun. They seemed

young men—in the late twenties or early thirties—judging from their smooth, clear cut features and strong athletic figures. Under the brief silken garments which both wore bulged muscles that told of unusual strength. Something about the set of their mouths, the square outlines of their chins and the levelness of their glances proclaimed both to be men of resolute and daring character, even as their well-shaped heads told of unusual intelligence.

Derek Porter, blond, English, and the elder of the two, turned to his companion with a pleasant grin.

"Well, Old Son, we are back on old Mother Earth again. How does it feel to you?"

"Fair enough," the other admitted. Verne Williams topped his partner's six feet by an inch or so. He was unmistakably American with his grey eyes and reddish brown

hair. "Wonder how long we've been gone?" he speculated, busying himself over the knobs and dials of the controls.

"Hard telling. Maybe ten years, maybe ten thousand. - Who knows? But as soon as it gets light"—they had alighted on the

shadowed half of the earth—"we can get out of this chariot and have a look around."

"One thing sure," Verne offered, "people won't believe half what we tell them about our trip. Not that I blame them, either," he added.

Nor would it be remarkable if the story of their adventures fell on skeptical ears, for they were returning from the strangest adventure man had ever undertaken. And this, in an age when man—newly conscious of his freedom from the grip of his native planet—had wandered about the solar system at will. But these two, in a ship far exceeding anything previously known in power and cruising radius and undreamed speed, had gone far beyond the boundaries of the solar system—beyond even the universe itself.

Toward the Southern Cross they had flown, seeking the answer to the riddle of the "Coal Sack"—that great dark pitch in the heavens where no stars shine and the blackness of empty space seems almost tangible. They had found it—a wide curtain of blackness, filling the heavens at that point for a space large enough to hide a dozen solar systems of greater size than their own. Through the curtain they had hurled their ship, through thick blackness in which the latent electricity and the cosmic rays of two impinging, tangent universes, intersecting at that point, struggled for supremacy, hurling back from their whirlpool of force even the light rays that sought to penetrate this cosmic veil.

The two earthlings in their man-made ship had won through at last. The ovoid, with the cumulative momentum of its long journey, plunged into the infinity of darkness, although the struggle in the black whirlpool threatened to disrupt the very atoms of it and the earthly intruders it bore. Their chronometers, their radio, the lights and even

the greater portion of the controlling mechanism of the ship had been destroyed or warped and twisted out of all usefulness. It was only after great effort that they were able to continue, having repaired the latter after a fashion with the materials which were available.

ONCE beyond the "Coal Sack," they had found themselves in a new universe, a firmament of colorful, mighty suns, blazing with all the known hues and others that they could not name. Around many of the suns, swung great planets, circling at a leisurely, unhurried pace. As they glided through the placid heavens of the strange universe, they felt a pleasant lassitude creep over them.

Their craft no longer hurtled through the sky at its former mad rate as it had before they had plunged into the maelstrom of darkness. Nor did there seem the need for speed.

They had landed on one of the strange planets, called by its own inhabitants Karaku, which encircled a great blue sun. Here they had found a pleasant and hospitable people, far different in physical and mental structure from the earthlings, but who had made them welcome.

On Karaku, with its habitable portion always toward the sun, there had been no time. The sun was always overhead and the period of the planet's rotation was so long that, though the Karakuans lived to fabulous ages, showing no changes as the "time" passed, there were none alive who knew when their world had last completed a trip around its orbit. So, having no means of measuring time, they did not measure it at all, but lived their placid uneventful lives completely oblivious of such a property. Nor did any but the earthling mourn the lack of measurements. Things moved so very slowly in this new universe that even



GARTH BENTLEY

the two strangers did not worry long about a thing that had no existence.

But the people of Karaku, although pleasant and intelligent, were not human beings, and the thoughts of the two men turned at last to the planet of their birth. In the timeless world they had no way of knowing whether they had been gone years or centuries. There had been no physical change in their bodies and they had drifted into the easy effortless life of Karaku. Although even their thoughts seemed to move slowly, at last they began to feel the desire to see creatures of their own kind. Eventually they took their leave of the hospitable planet, hurtled somehow through the dark veil and, after again repairing the damage to their controls, brought their craft at last to earth.

Derek, who had risen from the bunk where he had been indulging in a short nap, moved to the side of the ship and pressed his face to one of the fused quartz ports. For some time he stood looking out upon the scene, while Verne drowsed in his hammock, then at last he turned to his companion.

"It doesn't look like any place that I ever saw before," he remarked. "The sky is still hidden by the clouds but it's getting light enough to see things a bit. Suppose we start moving."

Verne rose from his perch and joined him. Outside the ship stretched a meadow of rank swamp grasses, reaching in places halfway up the side of the craft. Hemming them in on all sides stretched the dark green fronds of jungle growth. The tall trees, their tops like umbrellas, high in the air, were strange and unfamiliar. Some of them showed freshly broken tops where the space ship had plowed its way in landing and already the broken edges of their trunks were beginning to blacken. Verne considered the landscape for some moments without speaking. Then he whistled shrilly.

"Say, Derek, you don't think we could have missed our aim and landed some place else, do you? This looks a lot like Venus to me."

"It does that. But this is the earth, all right. Don't you remember the moon—just

before we dived through the clouds? There's no mistaking Sister Luna among all the other moons of the universe."

"But there's no vegetation like this on earth," Verne protested, waving in the general direction of the port through which he had looked upon the strange pulpy trees, the tangled creepers and the fleshy fungus. "Not even in the jungles of the Amazon can you find stuff like that growing. And by rights we should be well up in the north temperate zone—somewhere on the North American continent."

Derek scratched his head.

"I'm afraid what you should have said," he replied slowly, "is that there was nothing like this growing on the earth while we lived here."

"What do you mean?" Verne asked anxiously. Something in the big Englishman's voice conveyed more than mere words could have done.

"How do you know how long we were gone? We spent our time on a strange planet in an entirely different universe, probably in a different time dimension or in one where time wasn't a dimension at all. We know it took us years to reach the black curtain and the lord knows how long to return from it; and how long we spent on Karaku? As far as we were concerned time stood still while we were there. Neither one of us seemed to get a day older after we broke through the dark spot. If you ask me, I think a good many thousand years have passed since we last saw earth. Perhaps millions."

"Impossible!"

"Maybe. But there's the fact that everything is relative—even time. My own opinion is that we passed through another dimension where time just didn't exist."

"But what makes you think we were away so long? The scenery?"

"Partly," Derek replied. "But most of all the stars. Remember the Big Dipper while we were snorting around the planet before landing? How it seemed to have been pressed all out of shape? Back in school they used to tell you that the stars in it are actually moving in different directions but that it would take a long long time

before the changes could be noticed. The fact that they have visably changed position proves to me that a great many centuries have passed."

"Then," Verne remarked, only half realizing the import of his friend's statement, "that means everybody we ever knew or heard of has been dead for a long while."

"More than that," Derek replied grimly. "I'm only hoping we will still find human beings on the earth at all."

CHAPTER II.

The Thing in the Tree

"NO other people left on earth? Surely the human race cannot have disappeared entirely, granting even that a long time has passed." Verne was emphatic in his denial.

"Oh, I don't believe that the race would have died out of itself. But you can see for yourself the climatic changes that have taken place. The earth has evidently gotten much warmer, to judge from the tropical foliage; and if the change was sudden, whether it came from conditions in the center of the earth or because—which is more likely—the earth has been drawn closer to the sun, humanity might have been wiped out before man's intelligence showed him a way to conquer his new environment. Or, if the change came gradually over a period of many thousands of years, humanity may have evolved in various ways to meet the new conditions. People may be nothing like the men and women we knew. Human beings may no longer exist."

"I still can't believe that we've been gone so long although all of the evidence points to your being right," Verne sighed. "Now that we're back it seems to me that it was only yesterday that we left."

"It does seem like it," Derek admitted. "While we were on Karaku we were under a different set of influences and time didn't count. But now we're on our own world and each day we get one day older for Father Time is back in the saddle and we'll have to get used to his hard riding. The fact that we sit here so contentedly philo-

sophizing with a whole new planet to explore, proves that we haven't entirely shaken off the Karakuan influence. Let's get going."

He rose and strode over to the mechanism which controlled the doors.

"I'm going outside and see what it's like. Coming?"

"Sure. But wait a minute. I've been in jungles before and we'll need something besides our bare hands, particularly if we go far."

From a locker, Verne drew two of the strange metal swords that they had brought with them from Karaku, where the inhabitants—although essentially peaceful—considered a sword a necessary part of the costume. They were wicked looking weapons and could prove very useful where the vegetation was heavy. The long thin blades were broad at the top, tapering down toward the jeweled metal handles, and giving the appearance of long, thin inverted triangles. They were made of a metal unknown to earth, light as aluminum but able to shear through an inch plate of steel when wielded by strong men.

"They'll make pretty good machetes," Derek admitted. "Besides there's no telling what we may meet in a jungle like this. There may be snakes in those bushes."

Together they swung out through the outer door of the hull and jumped lightly to the thick spongy grass below. The humid, steamy atmosphere was like the interior of a turkish bath. Even in their light garments, their bodies were drenched with perspiration before they had taken a dozen steps through the safe muggy turf. Verne bent low, examining the sod.

"Derek," he exclaimed. "Do you know that this is we're walking on? It's moss—moss a foot and a half thick!"

They came to the edge of the little clearing and plunged into the forest hacking their way with the razor-edged swords. It was a jungle unlike any with which they were familiar. In many ways it resembled the swamps of colorless growths that covered the twilight zones of Venus, yet the flora were more nearly akin to that of the old earth. The thick undergrowth of shrub-

bery was a weird mixture of plants grown unbelievably large. The occasional trees they came across were fighting a losing battle against unclean parasitic growths that covered almost every inch of the stems and branches, drawing their sustenance from the lifeblood of the trees. Great toadstools and mushrooms reared their umbrella tops on thick, fleshy stems to the height of trees. Giant lianas drooped and festooned themselves from the branches of weedy plants, incredibly tall. Slimy and evil smelling mold and dank moss covered the ground, and everywhere was the overpowering fetid smell of decaying vegetation.

It was only by the greatest effort that they attained their objective—a giant acacia tree upon a little knoll, that somehow seemed to have defied the choking grip of the parasites. Verne swung himself up into the branches and climbed steadily to the top. As far as the eye could see, the jungle stretched unbroken. Through the powerful K-glasses, he could see a purple haze, far to the north that seemed to promise the presence of mountains.

He began to descend, swinging himself rapidly down through the branches. Half-way down, his foot slipped from its hold on one of the stems. To save himself, he grasped the first thing at hand—a dead limb about the size of his arm. As it came away he felt barbed legs fasten themselves to his arms and his body as the limb—now very much alive—clung tenaciously to his clothing. Slipping, dropping from branch to branch, his clutching fingers trying vainly to grip the tree, he plunged with his antagonist to the ground below. The jointed horror, struggling but, like Verne, half-dazed, waved long antennae aimlessly in the air.

DEREK, at whose feet Verne had fallen, leaped forward, his weapon poised carefully. The thing raised itself from the struggling man, a creature out of a drug-ridden nightmare. Derek's blade cut through the air with a vicious slash, and the horror, its body neatly severed, fell to one side, the long legs—unbelievably thin—kicking feebly.

Verne rose from the ground slowly.

"What was it, Derek?" he asked, shaking his head as if to clear his dazed brain by the gesture. "I slipped and grabbed hold of the nearest branch and then the next thing I knew the branch had pulled away and was fastened on to me with all kinds of arms and legs."

Derek was examining the dead monster with interest.

"Remember when you were a boy you used to see funny twig-like bugs on bushes and old trees? Walking sticks we called them. They were jointed just like a bamboo cane and when they were on a dead limb, you could hardly see them unless they took a notion to move. They were about the most perfect examples of natural camouflage among all living creatures."*

"Sure. I remember them. But the ones I used to see were only about three or four inches long while this one is almost five feet long and is as big around as my upper arm."

"This is probably the grand-daddy of them all, but there's no mistaking the breed. They are all harmless leaf-eaters." He paused and looked about him anxiously. "Do you know, Verne, I'm getting just a bit worried?"

"Why? This fellow's dead enough. And, as you said, his kind are harmless."

"I'm not worrying about him. He's done, and walking sticks aren't numerous even in a bug's paradise such as the world seems to have turned into. But if he could grow to such a size—what about the rest of the insect tribe?"

"Maybe he was just a freak—or some new species."

"Maybe. But while you were up there in the tree, I saw some queer looking birds flying around here—birds with six legs. One of them came close and instead of a bird it turned out to be an ordinary ichneumon fly—the size of a cock pheasant. And—look up there—" He broke off to point above the trees.

At first Verne thought it was a monoplane

*The ordinary U. S. variety is called *Diaperomera femorata*. These insects belong to the phasmidae of the order of orthoptera.

soaring high in the air. There was the long slender body-of the fuselage, the wide extended wings. Then it swung lower and he saw it for what it was—a great dragon fly, skimming the higher levels of the forest on its way back to some stagnant pool in the depths of the jungle.

By common consent the two turned backward toward the plane. They said little about the creatures they had seen. It was all too incredible—this new climate of the earth's and its effect on the insect kingdom. It would require time for their minds to become adjusted to the new conditions. As they walked along over the way they had come—where the rapidly growing fungus was already replacing the growths they had cut from their path—Verne mentioned the mountains he had seen through the glass.

"At least they looked like mountains," he said. "But from what I've seen so far I wouldn't bet on it. They're several hundred miles away at least. If we want to get to them we'd better take the ship. We couldn't make more than five or six miles a day on foot."

"There weren't any signs of human habitations, were there? Towns, houses or even smoke?"

"No. Not a sign. But this atmosphere is so thick and steamy that the range of vision is pretty limited even with the glasses. Over to the right of us I saw a place where a fog of mist was rising, but I'm pretty sure it was only a swamp."

"Lord! what a fine homecoming," Derek grinned. "Remember how we wondered what kind of an official reception we'd get from the people in the old home town? And now look where we've landed! We don't know where. We don't even know when. My vote is to go back to Karaku. The people there weren't exactly humans but they were better than bugs in a stinking swamp. Or we could get in the old tub and go cruising around until we find a planet peopled with humans."

The Green Monster

"WE may have to," Verne agreed. "But then we haven't enough power to

take us to Karaku or to go cruising around. There's just about enough to get us out of the planet's range of attraction, with enough in the forward tubes to allow us to land somewhere safely. Venus would be our only hope and it's probably worse than this. It was bad enough in the old days with its slimy worms and dripping forests. And the people always gave me the shivers with their dead fishy eyes.

"Besides," he continued, "I can't believe that there aren't any human beings left on earth at all. The human race is pretty tenacious when it comes to surviving under all sorts of adverse conditions. I'm for hitting north towards those mountains. It's a cinch that if any people are left, they'd make for the polar bear country. Let's have a look anyway."

"It's all right with me," Derek agreed. "After we've come all this way to get back home, I think I'd just as soon have a little more of a look around. After all this may be only a dirty little patch on the earth's surface. If we can just get the ship up off the moss—and I think we can, even if we haven't got an incline—we can use minimum charges and coast along a bit until we spot your mountains."

They entered the ship together. In a few moments, from the lower stern tubes came explosions of flame and sharp detonations of sound. The great ovoid quivered and wrenched at the clinging moss. The air was black with weird and unknown insects, disturbed by the waves of unaccustomed sound, swarming up from the dank, green depths. The ship rose with a jerk, pitching and tossing as they maneuvered it over the ground until the bow pointed northward. Then there was a sudden roar, the stern tubes belched smoke and flame, and the ship flashed in the air.

At minimum speed, the rocket ship swung northward in a series of great parabolas. Unequipped as it was with wings—except for the two stabilizing vanes on the sides of the craft—and lacking propeller or rudder, the two men were forced to depend entirely on the tubes to guide their vessel, as well as to propel it and keep it aloft. But when not at the controls, they found

time to study the country as they passed over it.

It was an utterly strange land to both of them. Everywhere stretched the seemingly endless sea of rank vegetation, broken here and there by small bare patches or spurs of naked rock. Above them lay the thick blanket of clouds that shut off all sight of the sky and made a definite ceiling for the murky, humid atmosphere. Occasionally the forest gave way to broad rivers, sluggish and muddy, or to steamy, semi-stagnant lakes whose surface was often disturbed by uncouth, weird forms. Apparently the same power which had given added size to the insect world had also operated to the enlargement of those hideous simple-celled inhabitants of the warm pools, creatures which mark the boundary between the plant and animal kingdoms.

On some of the pools, they saw great water bugs, gliding over the surface like catamarans, and near all of them they saw the hordes of the great dragon flies. Large black flies and other strange winged folk rose in clouds from the fungus growths of the forests, disturbed by the flaming thunder of the tubes as each fresh discharge sent the ship on another stage of its curving flight.

In one spot they disturbed myriad bird grasshoppers, huge insects grown to the size of eagles, that blackened the air with their numbers as they rose from the strip of forest they had been devastating. Through the glasses, Verne—who was at one of the windows—could see plainly the blunt armored heads and thoraxes, the powerful, jointed legs and the crushing mandibles, bathed in the dark brown secretion he had once called "terbacker juice" in the bygone days when he had captured their tiny cousins to bait his fish hooks.

They reached the mountains within a few hours and found them little more than rock hills, covered as was everything else by the dense vegetation. No sign of human habitation met their eye, but while they were looking for a place to bring the ship to rest, Derek saw—still farther north—a thin pencil of smoke. A short blast from

the rockets and the falling ship again resumed its course. A few seconds later, the firing of the forward tubes brought it to an abrupt halt and it crashed into the underbrush bordering one of the small bare patches. Verne, thrown off his balance by the force of the landing, climbed to his feet rubbing his shoulder.

"Nice gentle way you have of landing this crate," he remarked in an injured tone. "That's twice in the same spot."

DEREK turned away from the controls, grinning.

"This old lady wasn't built for a pleasure ship to go cruising about the planet. It was meant to head off in a straight line and keep going. Out there"—he waved a hand toward the clouds—"you can slow her up for a million miles or so ahead of your destination. Here we've got to stop in a hurry or we'd be half way around the globe. Besides, the distance of that smoke was deceiving. I thought it was a lot farther away."

They left the ship and, swords in hand, started across the ground. The going was not easy through the thick moss, but they finally reached the spot where the dying embers of the fire were sending out a few feeble flickers. It was an ordinary smudge of the type used to discourage the insect pests of the forest. But this was not the thing that most interested them—though the fire itself told of the presence of human beings. Two small tents made of a strange cloth interwoven with metal threads, stood close to the fire. With quickened steps they moved closer to inspect the tents for occupants when the humming silence of the jungle was broken by a shrill scream.

The two men stopped transfixed. It came again, a piercing shriek of terror. Feminine. And not far away. They turned and dashed in the direction from which the sound came, hacking their way through the tangled forest that sought to bar them. A third time they heard it, this time close by.

They redoubled their efforts and slashed through the last barrier into a second small clearing.

Three figures in the very center of the

space stood posed in an unforgettable tableau. There was a girl, young and pretty with her pale skin, and with her dark hair falling in a loose mass over her shoulders, shrinking back in terror. And there was a man, a white-haired man, who stood as if hypnotized, his hands gripping a long wooden spear, staring at the thing that confronted him.

It was this creature that drew their attention. It was huge—almost seven feet high. Wide delicate wings, pale green in color, trailed like misty veils from the slender body which stood supported on four wiry legs. Its head, ratlike, except for the great insect eyes—out of all proportion to its other features—was a hideous caricature surmounting a thin neck. The two great forearms were hugged close to the breast, folded up in a perfect attitude of prayer. With its devout pose and the fairy, delicate wings, it seemed an angel from a weird green heaven come to serve the bidding of a bizarre diet of a far distant planet. It stood, its neck slightly bent over the supplicating forearms and its gaze on the petrified man before it. Derek grasped Verne's arm in a grip that hurt.

"What is it, Derek?" the latter demanded. "It looks like a ghost."

"It's worse than a ghost. It's an insect devil, grown to a terrible size. A praying mantis. Come on!" He broke off and started across the clearing on a dead run, his sword gripped in his hand. Verne followed closely.

But their haste was in vain. Before they had crossed but a few yards a sudden transformation came over the green creature. From a praying angel it became an avenging devil with a suddenness that took the breath away. The wings spread to the fullest extent, standing up like parallel screens of transparent gauze. The end of the flexible abdomen began to curl and uncurl, swinging backwards and forwards between the four supporting legs with a swishing sound like the hiss of a gigantic puff adder. The upper portion of the slender body rose to its full height on the straddling under legs. The praying forearms opened

wide in a horrible embracing gesture, the murderous barbs and the sharp claw-like talons outspread.

The two men shouted vainly to the doomed human, trying to break the spell the weird, terrible creature seemed to have cast upon him. He did not hear them or, if he heard, he did not heed their cries of warning, but continued to gaze spellbound into the blazing opal eyes of the creature's darting head. *

Then it struck. Quicker than thought the forelegs whipped forward, the sharp talons gripped the man and drew him ruthlessly to the green breast. He shrieked in terror as one barbed forearm held his body to the creature in a cruel crushing vise. The cruel head bent swiftly forward as the other forelimb bent the man's head downward. Then the narrow snout of the mantis buried itself in the taut neck of its victim, severing the nerve ganglions and crushing the vertebrae.

Totally ignoring the hysterical girl and the two men rushing toward her, the mantis prepared to enjoy its ghastly meal. Derek reached the creature first, stabbing wildly with his blade at the huge terror. He sheared through one of the under legs cleanly, his blade burying itself in the creature's soft abdomen. It dropped its victim and wheeled to meet this new attack, assuming its terrible fighting pose. Derek, looking into the creature's eyes, seemed to feel a queer paralysis creeping over him.

He saw the great forearms distended, raised to strike. But the creature was hampered greatly by the missing leg and the deep wound in the abdomen. Its movements were sluggish as it moved toward him. He tried to shake off the fascination of the peacock feather eyes, to break the spell that held him. He saw the creature towering above him. Then Verne was on the creature's flank, his sword swinging.

*There is much speculation among entomologists concerning the reason for the mantis' pose. Many naturalists believe that this blood-thirsty insect (*Mantis Religiosa*, of the otherwise vegetarian family, *Orthoptera*) possesses the power to hypnotize its prey and that the pose is a part of its hypnotic process. Crickets, which flee from the slightest sign of danger, will stand motionless while the creature kills them. The mantis is the insect tiger, attacking anything and devouring its prey alive. It frequently devours its own mate during the act of mating.

A flash of cold metal and the mantis' head flew from its slender body.

Derek shuddered as the green specter sank to the ground, close to the body of her former victim. The great wings still fluttered and the legs moved feebly, but the creature was undoubtedly dead. They turned from it to the girl who was sobbing over the body of the dead man.

CHAPTER III.

Loma

EVEN in her grief at the death of her father, Loma was beautiful. Her dark eyes, veiled with a mist of tears, turned toward the two men as they approached her. Verne, hungry for the glimpse of a woman after so long a time among aliens, stared unashamedly and realized for the first time what had pulled him back across the reaches of space. Even Derek, hardened misogynist that he was, felt his heart warm to her in her sorrow. But the new conditions of earth seemed to have bred a stronger, less sentimental race. As if realizing the futility of her grief—or bowing to the inevitability of death—Loma soon dried her tears, crossed her father's arms upon his breast, picked up the thin javelin which he had carried, and rose to meet them.

"Who are you who have slain the green killer?" she asked, in a language, altered, greatly changed, but still recognizable as English.

They told her that they were two who had been very far away, visiting a far distant planet in another universe. They saw that their explanation meant little to the girl, and it was only when Derek waved his hand toward the heavens, telling her that they came from 'beyond the clouds', that they made their meaning clear. A shadow of disbelief fluttered across her face, but she made no comment other than to thank them for delivering her.

It was not until long afterward that Verne learned that neither she nor her people, the pitiful remnant of America's once proud civilization, had any conception of the universe beyond the clouds. To them, the can-

opy which kept out the blazing rays of the sun was an impenetrable roof over a flat world. Only a few had ever seen the sun on the rare occasions when the clouds had parted for an instant. Then it had seemed the avenging destroyer from a world of fire, shrivelling the fungoid verdure, and sending suffocating clouds of vapor up from the swampy earth. None had ever seen a star or realized the cosmic wonders that once made the heavens a thing of beauty to earth's peoples.

"Where did you and your father come from?" Verne asked.

Loma motioned toward the northwest.

"They live far from here," she replied, "many marches through the jungle. My father heard of other peoples living to the south and we set out with a great expedition to locate them. We travelled for many days, but ill luck seemed always to attend us. One by one our men were lost in the depths of the swamps or fell in battle with the insects. Some were stricken with the shaking death * and as we had no medicine they did not last long. Finally there were none but my father, my brother and myself. While we rested by the fire which we had built in a glade not far from here, he vanished. When we lay down by the fire he was there and when we awoke he was gone, leaving no traces. I fear the killer got him, too."

"Perhaps he merely wandered away," Verne suggested. "We may be able to find him for you."

"Perhaps," she agreed, but they could see that she had few hopes.

"At least, we can take you back to your people," Derek promised. "You will have to show us the way."

"Come, then." She turned to lead the way back to the tents and the campfire.

"Wait a minute."

Verne could not bear to leave the body of the man where it lay. Derek joined him, and together they dug a shallow trench into which they placed the body reverently. Loma watched in open eyed wonder as they built a rough cairn of rocks over the grave.

* Malaria.

"Do you not bury your dead?" Verne asked.

"No," she admitted. "We leave the bodies outside and—they vanish. Do they plant the dead in the earth in your city, which we sought so far?"

Loma had evidently ignored their own explanation of their origin and had identified them as members of the fabled colony her father had sought. Deciding that it would be useless to repeat their explanation, they continued to question her about her people and her city, while they plowed their way between the fleshy stalks of the sulphur-tuft forest. The great hoods of the toad stools, towering forty and more feet above their heads, dripped moisture unceasingly. Occasionally they encountered the fetid, overpowering odor of the foul stinkhorn * and they made wide detours to avoid its thick, gigantic column. Going slowly it took them some time to cover the ground that the two men had forced their way through in such a hurry only a short time before.

THEY reached the spot where the fire had been burning, finding it almost out. The tents were torn and trampled and near them they found traces of great foot prints. From Loma's description, for she guessed the intruder that had wrecked the camp—they recognized the destroyer as a giant beetle, who finding the tents in his chosen line of march, had calmly demolished them. They were just a little thankful that they had not been present when the monster had appeared.

The space ship lay undisturbed where it had come to rest, half buried in the muck and soft mud beneath the thin crust of the turf. Loma cried out and drew back as she saw the great vessel, evidently mistaking it for a new and, therefore terrible, species of beetle. Only after much coaxing would she even approach its sides, and both Derek and Verne had to go in and come out of the door a great many times before she would consent to follow them inside.

Once in the ship, however, her wonder

changed to immediate delight at the dry and cozy interior. Her intensely practical mind immediately grasped its utility as living quarters, and she seemed to appreciate to the full the safety it offered. Places of sanctuary, it seemed, were few and far between in the world that she knew. There, every strange creature was an enemy, and man—ill equipped as he was to fight a ravaging nature that gave no quarter—had only survived by matching his cunning against the armored and weaponed insects. From what she had told them they guessed that the people of her times lived in constant terror of the creatures which had inherited the world.

The steaming swamps, the fungus forests and the stagnant, scum-covered waters bred millions of hostile creatures, most of whom esteemed human beings as dainty tidbits. It was an insect-ridden world, a world where the works of man had vanished before the all-consuming dampness during the years when man had been too busy with the problem of survival, against ever-changing and always unfavorable conditions, to progress.

As a result, humanity had slipped a long way backward. The people lived precarious lives in the high caves they had hollowed out of the mountains. Cunning of the mass had given way to cunning of the individual. Except when danger threatened the home settlements, it was every man for himself—and a horrible fate awaited him who fell into the clutches of any of the carnivorous insects.

It was a terror-stricken Loma who first felt the quivering of the ship as Derek, at the controls, fired the forward rockets in an effort to escape the clinging tentacles of the mud which had gripped the nose of the ship. At last it shook itself free, and when it lay once more on an even keel the great stern tubes spoke and the ship lifted itself from the ground in a great swoop.

Once her fears were overcome, Loma accepted this new means of transportation with little difficulty. With true feminine logic, she felt no wonder at whatever the amazing minds of her companions might produce. After all, she reasoned, they were merely men, although rather good looking,

* *Phallus Impudicus*.

especially the reddish haired one. From time immemorial, woman has accepted the finest gifts man could devise as the portion justly due her—particularly if the man be her lover—without thought to the greatness or the strangeness of the gift.

To Loma, the great space ship which had struck awe in the hearts of the dwellers on strange planets, was merely a handy vehicle conveying her back to her own people, and she bothered little about the how or why of its origin and purpose. As she stood at Verne's side, watching the green country speed backward below them, her mind was far more occupied with the idea that her companion was very much in love with her, stranger though he was. And in her own way she was not at all displeased.

They had flown but a little while when there came an ominous sputtering from the rear tubes. Derek investigated and when he returned to the little cabin in the center of the ship his face was very grave. Verne noticed his expression and drew him to one side.

"What's the matter, Derek?" he asked.

"The fuel. We're almost out of it. One more discharge of the rear tubes will exhaust our supply completely."

"How about the forward tubes?"

"They have only a little left and we will need that to slow us up in landing. Plowing through this soupy atmosphere has taken an enormous quantity since we've had to fight both gravity and air resistance."

They were interrupted by a sudden shout from Loma, that sent them rushing forward to the window where she stood looking through the glasses.

"I think those are the hills where my people live," she cried pointing toward a distant line of purple.

Verne heaved a sigh of relief. The ovoid was already falling in the down curve of the arc and the flight would end in a few moments more. But they could easily make the rest of the way on foot. It could only be a matter of twenty-five or thirty miles, making due allowances for the deceptive qualities of the atmosphere.

Then the tubes gave a last coughing explosion and the ship began a long coasting,

fall to the ground. The forward tubes belched forth their blasts as the nose of the craft pointed to earth. Carefully gauged, the discharges slackened the ship's speed to a minimum and they made a safe landing on the soft moss.

The Onslaught!

REFRESHED by a short sleep and food from the ship's larder, the three left the sanctuary of the vessel and began the long trek through the wilderness toward the mountain home of Loma's people. In the comparative cool of the dawn they made good time. Verne and Derek, with their keen cutlasses hacked away the impeding lianas and thick grasses and cut narrow paths through dense thickets of calocera viscosa, sprung to imposing heights from the rotting vegetation which covered the ground. Loma, armed with a light hand ax, helped as well as she was able. But before long, in the depths of the jungle, they were forced to slow down their pace.

Here great forests of bamboo-like growths, so thickly seeded that passage was impossible, often caused long and tedious detours. Great puff-balls,* fifty to one hundred feet in diameter frequently blocked their path, and after Verne had disgustedly slit one with his sword, releasing a choking cloud of spores, they found it best to give these mushroom monstrosities a wide berth.

All day they forced their way through the tangled undergrowth, pausing only for a meal of food they had brought with them from the ship. When the mellow twilight, lengthened because of the light diffused through the enclosing cloud banks, warned them of the near approach of night, they prepared to camp near the rock ruins of a limestone hill. Not even the rocks, it seemed, could long withstand the destroying damp. Erosion had taken its toll of even the hardest substances.

Underneath the projecting shoulder of the cliffs, they found some measure of protection against the voracious mosquitoes which rose as the heat of the day moderated. These insects, large as hawks and

* *Lycopodon Giganticum*.

terrifying with the weird whirring of their wings, were a true menace to life. Only the fact that their natural enemies in the insect world had increased proportionately, while the warm-blooded men and animals from which they drew their food had almost died out, prevented them from overrunning the earth. As it was, there were plenty of them.

Yet it was not long before they found these monsters vastly preferable to their diminutive ancestors. Though the mosquitoes were far more dangerous because of their increased size, one of them being able to drain the blood from a human being, the loud noise of their wings gave ample warning of their approach and their size made them easy targets for the sharp swords.

When the darkness had fallen and the day insects began to give place to the huge moths and night flying things, they retired to a light sleep, leaving Verne on guard beside their fire. They were all thoroughly tired, for though they had come but a few miles, the labor had been exceedingly wearing. Derek had offered to stand the first watch, but Verne, knowing his partner had taken the brunt of the work during the day, would not hear of it.

He settled himself comfortably on a smooth boulder covered with moss and let his thoughts turn back to the old world he had known. But his day had not been an easy one and in spite of all his efforts, he found his eyelids drooping. He made a heroic effort to rouse himself but his eyes finally closed and he fell into a deep and profound sleep.

He awoke to find himself being lifted from the ground, his body held in a vise-like grip. He tried to move, to break away, and succeeded in loosing a cry which brought Derek and Loma to their feet in alarm. The moon had evidently arisen and its pale light, filtering through the clouds, made the scene light with a silvery, eerie radiance. He looked at his captor, twisting his neck about with difficulty, and saw a horny, horrible head, great eyes and two questing antennae waving above him. Giant mandibles held

him in an unbreakable grip, though the pressure on his ribs was not altogether unbearable.

He saw Derek running toward him and saw him strike at the monster. The great head that held him dropped from the thorax and he fell heavily to the ground. The mighty jaws relaxed, and freeing himself from the grisly, misshapen head, he climbed to his feet and retrieved his sword. He saw the headless body of his late captor, its six legs contracting spasmodically as death claimed it.

Then he heard Derek call to him and he saw Loma and his friend surrounded by a ring of giant ants. The monstrous insects, fully six feet long and standing several feet high were attempting to get within the circle of his flailing sword.

VERNE hesitated but a moment before throwing himself upon the nearest of the monsters. His sword sliced through the thick armored body and the creature went down. The insects, intent only on reaching Derek and the girl, ignored Verne as he hacked at them from the rear; until only three of them were left. Verne with a quick thrust, severed the antennae from the head of the nearest one, who, deprived of the most important of its organs, immediately withdrew from the battle, stumbling aimlessly around as if entirely devoid of its senses. Verne made for the next one but the creature, as if realizing that the battle was lost, turned and scuttled away at high speed, just as Derek disposed of the last of his antagonists.

Together with Loma, the two men inspected their late adversaries. The black, gleaming bodies, many of them still squirming in the pale moonlight, were horrible in the extreme, like creatures out of some fantastic purgatory. They seemed perfect fighting machines, with their heavy horny bodies and the cruel thick mandibles, capable of crushing the humans to pulp. And the silent, cold ferocity with which they had attacked, the purposeful intentness of their fighting marked them the real rulers of this new existence.

"Wonder why the other one scrambled in

such a hurry?" asked Verne as they turned from examining their victims.

It was Loma who answered.

"That ant went for help," she replied. "We have evidently stopped near a colony of them. It will come back with many others."

"Then we had better get somewhere else in a hurry," Derek decided. "There's no use sitting here waiting for trouble. Perhaps if we can get far enough away they will not pursue us."

But even as he spoke, they heard the coming of the ants. This time there were hundreds of them, approaching in regular formation. The two men held their swords ready and Loma, behind them, gripped the small ax.

"Looks like it's goodbye, old fellow," Derek said quietly. "We can keep them off for a while, but . . ."

"Maybe," Verne admitted. "We can at least give them plenty of trouble. Hit for their antennae; they're helpless if anything happens to them." He grasped his sword tightly and took a few vicious cuts at the air.

Then the first wave of the attackers swept up to them and they had no time for conversation. They struck blindly, wounding, killing, maiming, but ever the ants pressed forward. And still more came from around the hillside. By sheer weight of the attack, the three were pressed back against the cliffs, pressed back until they no longer had room to swing their weapons but had to depend on short, chopping cuts that often glanced off the armored heads of the insects. Then they felt great furry legs sweeping over them. Derek's arms were pinioned to his sides by the mandibles of a giant emmet and he saw its abdomen, with its needle-pointed stinger, curving toward his body. He felt a rapier-like pain shoot through him, heard a scream from Loma and Verne's voice curing loudly. Then he was gone.

CHAPTER IV.

Into the Commune

HE regained consciousness slowly, and found himself being carried rapidly

over the ground by one of the ants. He tried to move his arms and legs but found them unresponsive. Out of the corner of his eye, for he could not turn his head, he could see Loma's fluttering draperies and he tried to call to her and found that he could make no sound. He did not see Verne but guessed that he could not be far away.

For some time they swung along, going uphill and down, over the tops of huge fungus growths and up the sides of unscalable boulders. He marvelled at his captor's ability to carry him so easily, without pausing to rest or shift the weight of so great a burden. Then he remembered, from an almost forgotten course in zoology, that if ants were the size of men they would be the strongest creatures on earth. And he marvelled the more that he and Verne and Loma had been able to withstand them for so long as they had.

They came at last to where the path became a definitely marked road which led into the city of the ants. The great hills towered hundreds of feet in the air and covered acres of ground at their bases. Cone-shaped, the great bulks seemed far larger than any works of man, than any of the architectural wonders they had seen on far Karaku. The dwellings were roofed with stones,* giving them an appearance of solidity which he felt was entirely deserved. Nothing short of a severe earthquake could damage them.

They met numerous others of the great creatures coming from the communes, warriors, like those which had captured them, workers major and the tiny workers minor, setting out to forage food for the larvae, the nurses and the ant queens. No one showed the slightest curiosity toward the captives, nor was there any reception accorded the captors.

Occasionally a soldier stationed along the avenues challenged members of the party, and there was a great deal of gesticulating and rubbing of antennae, while the guard sought for the identifying odor of the communal hill. The challenges became more

*These ants had evidently evolved from the occidental ants found in western United States, which roof their hills with pebbles, stones, etc.

frequent as they approached the towering entrance, like the mouth of a huge cavern, at the base of the central dome. But always they pressed onward, and at last passed into the great corridor that led to the inside of the commune.

For a long time, or so it seemed to Derek, they were carried through the dark, stuffy corridors of the commune. As his eyes grew more accustomed to the semi-darkness, he could make out the bare walls of the avenue they were traversing, and the endless corridors intersecting it at regular intervals. A continual stream of workers passed them, going toward the outside.

They came to the store rooms, situated far below the surface of the ground. Here they were met by countless workers carrying eggs upward toward the higher cells of the mound, where the warmth of the outer air during the daylight hours might hasten the process of incubation. Derek marvelled that the great mandibles, capable as he well knew of a bone crushing grip, could carry the eggs with so gentle a pressure as to cause no damage to the delicate shells or their undeveloped inmates.

Then they came to the rooms where the "nurses" were caring for the queer, helpless larvae. Like human nurses in hospitals, these ant prototypes hovered over their charges, feeding them, changing their positions. They groomed the bodies of the larvae as well, licking them as a mother cat licks the fur of her kittens. In another huge cells, Derek caught a glimpse of a great-bellied queen mother surrounded by a horde of her worker attendants.

DEEPER in the commune they came to other great rooms where workers and virgin queens were attending the fungus gardens. In still others of the subterranean chambers of the dwelling, he saw workers caring for the aphids—the domesticated cows of the ant world, great soft creatures who accepted their grooming with every evidence of pleasure.

At last they came to the tier of cells where the worker ants were busily engaged in storing food away. Into one of these the three ants with their unresisting burdens

made their way. While Derek was speculating on the probable fate in store for them there, the three of them were unceremoniously dumped on the floor and rolled to one side. Thus their captors left them beside the bodies of huge beetles, hornets of great size, and other insects which had some how fallen into the clutches of the ants.

Here they lay helpless for a long time in the stench and smothering air of the dim roof, unmolested and, to all appearances, forgotten. They had become a part of the commune's emergency store of food and would remain there until needed. Seeing that Verne was awake, Derek called to him softly.

"Hurt, fellow?"

"No. But I can't move. What have they done to us?"

"Paralyzed us with their stingers and laid us away in their icehouse until somebody gets hungry or the food supply runs low."

"Why don't they kill us and put us out of our misery?"

"Why should they care how miserable we are, even if it occurred to them to think of it at all? I imagine that they expected us to die from the effects of the stinging, but we were just paralyzed. You forget that we're dealing with insects now. They don't think or reason any more than so many of the Karakuan robots. These bugs don't consider us enemies in the sense we think of the word. When they bumped into us we were pretty dangerous customers, it never occurred to them that we might not be forth the lives it would cost to get us. Their instinct told them to capture us and they did it. They would have kept after us until the last ant in the tribe was dead. But once they had us stored safely in the hill, they forgot us."

After a long while, during which he must have slept, Derek heard Loma calling to Verne.

"Verne," she called softly. "Oh Verne. I believe that I can move my arm."

"Yes," Verne answered. "I've been feeling little twinges in my legs for some time. How about you, Derek?"

Derek tried to move and was able to turn his head slightly.

"I believe that the poison is beginning to wear off," he replied. "Evidently it doesn't have a permanent effect on human being, through our skins and our lungs. I imagine the stuff they shot into us was some kind of a formic acid compound and, while it might have been fatal, it won't have any permanent effects."

The time passed with a slowness that was maddening. To the three, unable to move about, it seemed that they had spent years as captives in the commune. But little by little they gained the use of their limbs. At first they found their bodies sluggish, hard to control, but as more time passed they were able to move about the chamber. As the paralysis left them, they began to feel the need for food and water. The men had brought a supply of concentrated food from the rocket, but it was only a question of time until they faced the alternative of starving or helping themselves to the ants' gruesome stores.

Their captors seemed to have had absolutely no curiosity concerning their strange garments or accoutrements. Nothing had been taken from them. Even the great swords, stained with the life fluid of the warriors had been left in the store room with them, clutched in the frozen grip of their paralyzed fingers.

Once more in control of their bodies, the three began laying plans for escape. Verne, who seemed to love a good fight for its own sake, was all for a bold attempt to cut their way out of the commune. Derek, on the other hand, remembering the swarming thousands that filled the corridors between them and freedom, was in favor of more stealthy measures. Eventually his counsel prevailed and at length, swords ready, they prepared to leave the prison that had held them for so long.

Brains versus Instinct.

THE lower corridors were comparatively free from ants. The occasional workers, returning laden with food for the store rooms, they avoided by dodging into nearby corridors when possible. When they had no time for this, the worker was murdered in cold blood and the body placed in

the nearest food chamber. Once or twice they met great males, the phenomenally stupid consorts of the ant queens. These were great hulking fellows, unable to distinguish friend or foe, dependent on the workers for their sustenance and lacking the fighting qualities of the workers and warriors. These were calmly ignored by the three fugitives.

For some time they wandered about the subterranean catacombs, hiding and fleeing and fighting. Yet always they made their way upward toward the light of day, and each succeeding hour of freedom gave them renewed confidence. Then one day they met their first warrior ant and the whole course of their plans was changed.

Derek was in the lead and he stopped suddenly as he came full upon a full grown warrior turning from a side corridor. The ant halted abruptly and, as Derek held back, waiting for Verne to join him, the warrior examined him closely with great near-sighted eyes. All the time the questing antennae, where, as he knew, the ant's powerful sense of smell is located, went carefully over his body. Then as if reassured by the examination, the ant passed on, leaving Derek frozen with astonishment.

Verne and Loma who had waited, silent spectators of the meeting, for some hostile move on the part of the warrior, moved quickly to his side.

"Why didn't the ant attack you?" they asked breathlessly.

Derek shook his head. Then to their intense surprise, he burst into a ringing peal of laughter.

"I'm just thinking of the time we have wasted," he said. "If only I had remembered what every student of entomology knows, we would have been free before now. Ants depend almost entirely on their acute sense of smell and on the instincts that guide their every moment. They recognize their friends or enemies by smelling them, and we have been in this particular hill long enough to have soaked up some of the communal odor of this outfit. That ant may have thought I was a funny looking worker, but as long as her feelers told her I was all right, she believed them in prefer-

ence to the evidence of her eyes."

He broke off, chuckling.

"All this time we have spent sneaking down corridors and hiding out was purely unnecessary," he continued. "Ants are the wonders of the insect world, marvels of industry and courage, and living in highly organized communities, but after all they are only insects and are ruled by instinct rather than intelligence. And whenever blind instinct meets intelligent reasoning, brains always win out. The very strength of the ants is, after all, their greatest weakness."

He grasped his astonished companions by the arms and moved off down the corridor.

"Come on. All we have to do is to walk boldly out of the hill and not an ant will disturb us."

The ease with which they made their way to the upper levels proved the truth of his assertions. The great majority of the ants they passed, busily engaged in the work of the commune, ignored them completely. An occasional soldier halted them momentarily, but always allowed them to pass undisputed. At last they met a file of workers, bound evidently for the outside, since they were empty handed.

The three humans attached themselves unobtrusively to the rear guard of the group and passed along the corridors henceforth unchallenged. It was a master stroke, for they might otherwise have wandered about the labyrinthian ways of the commune for a long time. As it was, they noticed the avenues growing wider, until they found themselves in the broad main corridor, leading to the entrance. It was all they could do to keep from running ahead to the bright opening that marked the presence of light and fresh air. But they restrained this impulse, knowing that to give way to their desire would invite unwelcome attention on the part of the guards at the entrance.

Following the unconscious file of workers, they passed beyond the confines of the hill; and not until they were outside the limits of the community of stone roofed mounds did they fall back and allow their guides to go on without them.

Many days later, days filled with almost miraculous escapes from death in many different forms, days of creeping across clearings and hewing their way through the jungle of ferns and fungus, they came to the upper end of a valley set well among the hills of the north. Here the fungus grew less luxuriantly, the undergrowth was less dense, and occasionally they found trace of once familiar plants. Loma, who was leading the way, halted and turned to her companions.

"We are nearing the valley with me? You will be welcome."

Her words were addressed to both of them, but her eyes were resting on Verne's face, pleading. With her family wiped out on the ill-fated expedition of which she was the sole survivor, there was little to call her back—although there were many young men in her village who had looked upon her in a way that told of love unspoken. If only, she thought, this young man with the reddish hair . . .

Verne caught her glance and smiled, his heart leaping within him.

"After all, why not, Derek?" he said, trying to make his tone appear casual. "There is no place else to go and they are probably the last remnants of our own people. We came clear across space to find them. There is no reason for not going on."

Derek nodded.

"Sure," he replied. "I imagine they are pretty primitive but then we can help them out considerably. Perhaps in time we can reclaim part of the land, drive off the insects and establish a new civilization. Perhaps we can even build space ships to carry them to another planet . . . We'll do a lot for them, won't we, partner?"

"Yeah."

Verne's voice was muffled, for his lips were pressed close to Loma's dark hair. Derek glanced at them and then turned away. He stood looking off down the valley that sheltered the remnants of earth's people, his mind busy with a golden dream of future empire. But Verne's thoughts were all of the present and the girl in his arms.

THE END.

Between Dimensions

(Continued from Page 639)

volved passage through a dimension unknown to us. That is, the cabin travelled a great distance, probably hundreds of millions of miles, through three-dimensional space, by moving a short distance, perhaps only a fraction of an inch, through the fourth dimension.

From a former official of the Wisconsin Light and Power Corporation I learned that huge quantities of current had been made available for Scanlon's use between the hours of midnight and one o'clock, daily. Thus, a few minutes after twelve, when he turned his apparatus on, the cabin disappeared from its hilltop sight and was instantly transported to the deserts of a remote world. An hour later, when Scanlon shut off his beam, it instantly returned. On that last night, the laboratory must have caught fire in the midst of the experiment, and in some unaccountable manner the ex-

tingtion of the beam failed to recall the cabin. It was left marooned forever on the far side of the universe.

The above is my explanation of the facts which I have related. Obviously, much of it is pure speculation, but I have checked it carefully and it fits all the known facts. I have told the story to Du Cles, and he agrees that the hypothesis is at least highly probable. It was at his insistence, in fact, that I have written this account of my experience. It was he who first pointed out to me that if the explanation outlined above is correct a way has been opened whereby the human race may explore some portions, at least, of the more distant parts of the universe. Under his direction research has already begun with the aim of duplicating Scanlon's apparatus. The hope of enlisting public support of the project has been my chief motive in writing this simple chronicle.

THE END.

What Is Your Science Knowledge?

Test Yourself By This Questionnaire

1. Why is a Diesel airplane motor different from an ordinary kind? (Page 602)

2. How is it possible to tap a telephone or telegraph line without touching it? (Page 603)

3. What is the penetrating power of cosmic rays? (Page 607)

4. How is it believed that life originated? (Page 614)

5. What are the weaknesses of present day rockets? (Page 616)

6. What is the Fitzgerald Contraction theory? (Page 628)

7. What is the "coal sack"? Where is it located? (Page 642)

8. What is the praying mantis? What are its distinguishing habits? (Page 648)

9. How do ants determine friend from enemy? (Page 655)

After 1,000,000 Years

By J. M. Walsh



(Illustration by Marchionni)

We saw the building vastly magnified. It was full of people sprawling about in all manners of attitudes. But everyone was dead.

ADMITTEDLY a time-travelling is a subject for theorizing. Admittedly also it is a subject full of paradoxes. I have tried in the following necessarily brief fashion with such paradoxes as arose in the course of the narrative. There may be others that I have omitted. Neither have I tried to deal with the aspect a future civilization may present to a visitor from today. That is pure speculation. Some may say one thing, and some another.

Human nature being what it is, however, the chances are that civilizations will rise and fall, as they have in the past, that discoveries will be made and lost, and made again. That much I have suggested in passing.

I have not enlarged on the mechanical side of time travelling. The mechanics, at least in theory, are fairly well understood by all who like this branch of scientific fiction. Once assume that they can be put into practice, and the rest is easy. Whether the subject has ever before been treated from precisely the angle I have taken I do not know.

I wrote simply to clear my mind of the one idea that I believe has never been elaborated before,—that time used must be accounted for. To put it more plainly, if I

After 1,000,000 Years

By the Author of
"Vandals of the Void"

paradoxes. I have and remain there exactly one week, I do story to deal in a not believe that I can return precisely to

AS Mr. Walsh states in his foreword, time travelling is filled with interesting paradoxes, that should provide endless mental speculation.

The ability of man to travel into the future or past and alter the events of either time, are doubted by most of those who have given the matter serious thought. To alter the future whose events flow from immediate happenings, or the past that is gone, is to kill altogether the sequence of events.

Yet the newer science of physics seems to offer some hope that this might be possible. We know now that events do not happen continuously but in jerks and spasms, and that they do not happen in absolute accordance with cause and event, but with the laws of probability. Although the interruption of a stream of events, by the intrusion of something entirely foreign, like the invasion of a twentieth century man into the world 1,000,000 years ahead, may strike us now as being impossible, a future world may understand and accept it.

Mr. Walsh, the author of "Vandals of the Void" in the summer WONDER QUARTERLY, makes a new success for himself in this interesting little story.

leave here, for instance, at 5 p.m. on Wednesday, travel a century into the future, exactly one week, I do return precisely to my own era at 5 p.m. on the day I started. I have lived a week in the interval. That week must be docked from the period of my existence. When I return I shall come back perhaps to the exact hour of the clock, but I shall be a week older. My calendar will show that seven days have passed from my life. I cannot live those seven days over again. That much is clear. This is not to say, admitting the possibility of time travelling, that if I am to have a life-span of seventy years that I may not spend thirty of those years in the twentieth century and the remaining forty in the twenty-fifth century. I cannot live the whole seventy in both centuries, that is all.

IAM the last man, the last man of all Earth's teeming millions to be left alive on this once populous planet. I have seen this world, woefully, incredibly aged, bleak and desolate, writhing in its death-throes—

yet I have escaped to tell this tale.

So much I write, then turn to look out my window on the busy, crowded street be-

low. I hear the hum of traffic and I see the movements of people, many thousands of them. I know that I am somewhere in the center of a city of eight million souls. Not one of them realizes the doom ahead. If they did, it would not matter. They will all be dead and gone long before it comes to pass. Seeing that, realizing this, my story seems well-nigh incredible, even to myself, who went through it all.

I can hardly expect to be believed. At times I can hardly credit it myself. But for two things I should end by fancying that I had dreamed it all, that I had been a victim of some particularly vivid nightmare. But no dream, no nightmare could possibly linger with its details so sharply etched in my mind. And, as I say, there are two things left me from that time, two proofs, if one can call them, that my experience was not altogether the product of a disordered mind. Why such an adventure should have come to me of all men I cannot say. It came—that is all—and I must record it as best I can.

My name? It is John Harling, my status that of a real estate broker, surely a prosaic profession. That much no doubt is proof for the credibility of my tale; my clan is unimaginative; we cannot invent such tales. But let that rest.

My story opens out-of-doors on a summer day in the third decade of this, the twentieth century. I was, to put it plainly, hiking, dressed in the conventional costume for such a pastime, my rucksack on my back, a staff in my hand. I was making for the crest of one of those deserted, paths of leafy Surrey hills. A way not yet invaded by the ubiquitous London motorist.

The crest of the rise lay before me. I had nearly reached it. In my mind there was forming already the pleasant picture

of a halt, a drink and a bite beneath the shade of the trees before I proceeded on my way. There was nothing then to tell me that a million years would pass before I drank or ate again. Unless that seeming hint of thunder in the air had anything to do with it.

Abruptly I saw a flash. Lightning, I thought, out of a clear sky at that; and I wondered why I had heard no peal. Then on the heels of the flash some branches crashed with a rending sound, as though some heavy object had torn its way through them. A lucky escape for me. The lightning might easily have struck me rather than that tree towards which I stared.

Then I rubbed my eyes. What I saw was so different from what I had expected.

It might have been the original fiery chariot from Heaven. Such was my first confused thought, for even at a glance I could see that it was no vehicle such as I was familiar with. It seemed much like an airplane minus the wings. Yet there was a subtle difference. The body was slightly stream-lined, but nose and tail were blunt, with a cluster of sinister-looking tubes fore and

aft. From these a thin golden vapor rose in thin, lazy wisps.

The machine itself—I could hardly think of it as anything else—was of an odd kind of metal, weird and strange. It was the green of an emerald, so that I might have taken it at first to be some species of crystal did not everything in me cry out that it was metal. I learnt later that such it was. The length of the machine was studded with bosses, seemingly of quartz. Port-holes, windows, perhaps doors. Their exact function did not appear at the moment.

I stood and stared, even then not quite convinced that my senses had not played me some strange trick. Then gingerly I reached



J. M. WALSH

forward my staff. The machine seemed real enough. It was solid to the touch. More daringly, I tried it with my hand. It was warm to the feel, yet not unpleasantly so.

A door opened in the machine. A section of the side slowly slid away into the hull, and I waited, wondering what was to be revealed. I think I was more curious than frightened, and the one idea in my mind was that this undoubtedly was a visitant from some other planet. To me, first of all men, was to be given the privilege—or the horror, which I knew not—of meeting the strangers. As the door slid gently open, speculation after speculation raced furiously through my mind. I tried to picture a hundred different and alien forms of life, any one of which it might be my lot to view.

I was wrong.

ONE person only stood framed in the opening, a being in human form. More staggering still, it was a girl. Call her that, though at a glance she looked more mature. A Juno-esque figure, clad in something that looked oddly like chain-mail. It was golden and it seemed to glow—a little. The head was bare, though I saw she held some sort of a helmet in one gloved hand.

I am no weakling; I am built, if anything on a large size, without unnecessary flesh. But this girl was every inch as tall as I, though naturally better proportioned.

While one could count ten we stood and stared at each other. I take it that she was quite as surprised at my appearance as I was at hers, each of us fumbling for words adequate to the situation.

Then she spoke. It was a soft musical voice in its way, though it held an odd hint of power that I did not like. Had she spoken in some language utterly unintelligible, I don't think I would have been at all surprised; the fact that she was using English of a sort—queer, distorted, and to my ears archaic—was more astounding. Yet it was not hard to follow. One could sense the drift of what she was saying.

Actually she was asking me what year

this was. I told her. 1935. She frowned a little.

"I have made an error, an error in calculation," she said, "but a few years out in a million is not so much after all."

A million? I gasped. Then: "Who are you? What do you mean? Where do you come from?" I asked with a rush.

She smiled a little, as one of superior wisdom to a child.

"I am Leela Zenken," she said simply, "and I have not come from anywhere—in space. But in time I have come from an age a million years ahead of this."

"In that thing?" I said, taking a step forward.

She nodded. We were becoming more intelligible to each other now, our pronunciations seeming less odd. "Yes. A time traveller. That is it. But is not this London?" She stared about her at the green trees.

I shook my head. "You are perhaps twenty miles from the nearest part of Greater London," I told her. "It doesn't extend as far as this—yet. Perhaps in fifty years—"

She did not wait for me to finish, but darted inside the machine, was gone a second, and returned.

"That is it," she said breathlessly. "An error. Fifty years out in time. And thirty feet in space. In my day the land, this point, is that much higher. But you, what are you, what do you do?"

I told her briefly. Though at first she did not understand the function of a real estate broker, she did at last. She did not seem so pleased.

"I had hoped for perhaps a scientist," she was watching my face as she spoke. Some passing shadow must have given her a wrong idea of what was in my mind. "I mean," she added hastily, "I wanted one who would not discredit what he cannot understand."

It was all Greek to me. That some object lay behind her words I did not doubt, but at the moment what it was was not apparent.

"What exactly," I said, "do you want, and what precisely is it you hoped to do?"

Her answer was evasive enough in one

sense. "I had hoped to reach the year 1985," she said. "My reasons—" she waved them aside, unuttered, perhaps because they were no concern of mine. "It is a strange world to me, a strange time, a strange people. But we seem to understand one another. If this had been 1985 no doubt you would have helped me."

One idea after another chased through my mind. After all, even though it was not 1985, why should I not help her? I was young, unattached, no relatives, no one but myself to worry about . . . and this was adventure, of the sort one might never come across again.

"Why shouldn't I help you now?" I said, greatly daring.

She looked me up and down. "You are of the wrong age," she said deliberately. "I go fifty years ahead."

"But the people of fifty years time should not be so radically different from what they are today," I protested.

"That is true. I might after all . . ." She looked back again into the interior of the machine, thought a moment, then, "Come," she said.

I had little or no idea just what was in her mind, but I obeyed her invitation and stepped inside. No sooner was I in than she touched a lever and the door slid closed. She touched another lever and there came a roar of sound from outside.

A Miscalculation

"WHAT are you doing?" I asked bluntly.

"Raising the machine," she said calmly. "I miscalculated before. It has taught me a lesson. In the years the land has risen. If we went back to my own day we might arrive to find ourselves thirty feet under the earth. In fifty years' time, who knows but that we might come to rest inside a building, with disastrous consequences."

"Then we are not yet travelling in time?"

"No, only rising. It is better to do the travelling in free air."

"I see." I bent over the bank of keys and dials in front of her, and tried to make something of their arrangement. But I

could not. The theory of time travelling I had read of vaguely. The idea of time like a river. One could travel with the current, drift from source to mouth. Mechanically one could quicken one's speed on that river, beat the drift of the current, as it were. The faster one moved the further behind would be left the particular patch of water surrounding the boat when one started. Conversely, the boat could travel against the current.

That much, admitting the analogy between the flow of time and the flow of a river was, clear enough. The mechanical means necessary to achieve this result were a trifle more complicated. Her explanation of it all was necessarily brief. Some of it I grasped, and some I did not. In many respects the science of her age was couched in terms unintelligible to me.

She cut her explanation short. "Are you ready? Then please sit down." She pointed to one chair, and seated herself in the other. "We will start our flight through time. Not long, only fifty years."

She leaned forward, and set a pointer on one of the dials, then pressed a button immediately beneath it. The machine seemed to behave crazily. I had an impression of walls whirling and dissolving and I fancied I heard a stifled cry from the girl. Then . . . nothingness.

I came back to myself abruptly, with a growing sense of strangeness, a feeling that all was not as it should be. The girl herself had slid to the floor; her head was resting against the back of the chair, and her eyes were closed. From the look of her I knew she was unconscious, but whether she had fainted or it was the result of the time travelling I could not say. The bank of keys ahead of her looked oddly twisted; the glass stuff of some of the dials had broken, and everything looked crushed and crumpled as though it had impacted heavily against something.

But the machinery's injuries could wait. I turned to the girl, wondering how I could revive her, but she saved me the trouble. Her eyes opened, flickered, closed again, then with an effort of will, opened once more and remained open.

She sprang to her feet with a little cry the moment she got command of herself, glanced at the dials, then rushed to one of the porthole-like objects and stared through it. She remained there some time. What she saw I do not know, but when she turned back to me it was with an expression of consternation on her face.

"I have failed," she said. "But the fault is not altogether mine. First my original miscalculation, then the jolt the machinery received when I landed in your era, both together may have caused it."

"Tell me," I said, with a queer sense of tightness about my heart, "just what has happened."

She looked me squarely in the eyes, and—I liked this—though she felt the fault was hers, she did not flinch before my gaze.

"It is this," she said a trifle unsteadily, "I am back here in my own age, you with me, a million years ahead of yours. The machinery did not function as it should have. The moment I pressed the lever we were shot with an extreme time velocity back to the point from which I started."

"Well," I said, for one age seemed quite as good as another now I had taken to time-travelling, "I don't see that it matters much—as far as I am concerned."

"But you don't understand," she said quickly, with an edge of consternation in her voice. "Unless I can manage to repair the machinery, which I doubt, you are marooned in time, a million years ahead of your day. That in itself might not matter so much to you or to me, were it not that the very days of this Earth, which is the home of us both, are numbered. Is that not sufficiently appalling for you?"

IT was. I sat down heavily, and stared at her unbelievably. For the moment I did not know what to think. The prospect was too stupendous for me to take it all in. She left me to my thoughts.

In a little while I saw that she was opening the door that led outside the machine, and she beckoned me to come with her.

"But first," she said, "you must put this on." It was a suit similar to the one she was wearing, designed, I learned, to pro-

tect the wearer against any extremes of cold that might be met.

Something of my numbed state I had no doubt put down to the shock her announcement had given me. Now I began to realize that the air was cold, almost like the blast of a refrigerating chamber. Perhaps the Earth was passing through another ice-age. That may have been what she had meant.

Or perhaps the planet had tilted again, as it had already done more than once in its history, and the poles had shifted. I did not know. I could only wait and see for myself what had happened. At least she made no move to enlighten me then, but instead seemed all impatience to be about whatever business she had in mind.

We stepped out of the machine. I had expected to find myself in the open air, but instead, looking up, I saw we were in a vast building made of some transparent substance like glass. The air in it was keen, almost icy, and I looked in vain for signs of life. We two seemed the only human beings alive.

The girl did not speak, but merely motioned me to follow her. We passed down through the huge building to one part that had been partitioned off into rooms. Since they, too, were made of the same glass-like substance as the rest of the building, it looked as though the divisions had been made more for the convenience of work than for the sake of privacy. Despite the warmth given out by the electrically heated suits we were wearing, the girl shivered a little.

"It's colder than it was," she said in a low voice. "The power must be giving out, the heaters running down. I pray nothing has happened. I have been away so long . . ."

"Why? What does it all mean?" I asked.

"Presently," she returned. "It is a long tale. I cannot tell it all to you now. First I must learn what has happened."

We came to a room. The floor was bare, but the walls were covered with a profusion of dials, keys, and plates not unlike those of television screens. She studied the apparatus carefully for some seconds, then

made some adjustments with switches and levers. One of the television screens glowed to life. I became aware that I was looking at a vast building, similar in some respects to that we were in. She made other adjustments, localized the view, so to speak, so that we were looking at one particular section of the building, vastly magnified. It was full of people, men and women dressed after the fashion of the girl by my side. They were sprawling about in all manner of attitudes, but everyone of them was dead, frozen stiff. The cold of space had crept in and killed them where they lay.

An hour or more we spent there while the girl searched one screen after another, the television eye roaming from one point of our globe to another, and always with the same result. Nowhere on the whole round of the Earth was there life! It was a dead world.

At last with a little moan she turned away, then dropping abruptly to a crouching position on the floor buried her head in her hands, and began to sob. Woman to the last. After a million years, the sex had altered but little.

I caught her by the arm, and raised her, a little roughly, I am afraid, but I felt she needed to be shaken out of her bog of despair.

"Tell me," I said, "what has happened. I am still very much in the dark. I think it is time that I should know."

She faced me with burning eyes. "It is all my fault," she declared vehemently. "I have been the last hope of my race and I have failed . . . lamentably."

"But how? All may not yet be lost. Perhaps I can be of some help. Not much, I'm afraid, but the telling of your story may throw a new light on something hitherto obscure. Who knows?"

"I doubt it," she said, almost sullenly—anger with herself—"but it is right that you should know. I have brought you here. It is for you to judge me."

A Tale of Doom

WITH that she started her tale, making it under the circumstances, necessari-

ly brief. Some I understood of what she said, and some I did not. Remember, in many ways the science of her age was a million years ahead of ours, and again they had forgotten many things we know.

A tale of a world suddenly faced with the prospect of dissolution. The Solar System swimming into some uncharted reach of space encountered a stretch of unknown substance, a gaseous entity, a hole in space—no one seemed able to say with any degree of certainty just what it was—that possessed the singular power of intercepting the heat-giving, life-giving rays of the sun.

"Then," I interrupted, "it is not a case of a dying sun? The sun still lives?"

She nodded. "Look," she said. She pressed a button. One of the television screens came to life. I found I was looking at the sky, not materially changed from that which I had known. The sun was climbing towards the zenith, no smaller, no larger than I remembered it, but it was a sickly red in hue. I could look at it without hurt to the eyes. I might have been regarding it through heavily smoked glasses.

"Go on," I said. I was beginning to understand a little.

She went on. This unknown element, a substance with the power of shutting off the heat of the sun in the same way that a lead shield will cut off the emanations of radium, augured death for the earth. Time was short. From the day the fantastic properties of this unknown element had first been discovered, scarcely two years were left before the curtain would be drawn completely between the sun and its family of planets.

The scientists of the world were mobilized. Some suggested one thing. Some suggested another. None were of any practical help. In the million years that had passed since my day secrets had been discovered and lost again, inventions made and destroyed. The story of human history was the story of good things used not always wisely. There had been conflicts between nations, between the inhabitable planets even; civilizations had risen and had perished; a graph of human progress would have shown a series of alternating peaks

and depressions. Old records that might have been of use had been lost or destroyed in one or other of the many conflicts when the red lust of destruction had been let loose.

It narrowed down to this in the end. To save humanity some means of replacing the sun's heat must be found. The desperate need spurred men on to further efforts, the while the glass-roofed cities were built in the hope of staving off the final calamity for years if all else failed. Old records, such as remained, were feverishly searched. Mention was made in them from time to time of the discovery of a principle of atomic energy, light- and heat-giving. If such a thing could be re-discovered the world would be saved, for it was felt that the blotting out of the sun's power was only temporary, that in the course of time the Solar System would have passed out of the area of malefic influence.

Feverish work, almost to no purpose.

Leela Zenken had her own ideas. Her mind ran on the possibilities of time travelling. If she could construct a machine that would take her back through the myriad years she might be able to make contact with one or the other of those men of the past who claimed to have discovered the principle of atomic energy. For a time she was laughed at.

Time-travelling was a theory then as now. The mechanical difficulties seemed insuperable. But she worked away, making this experiment and that, failing always, yet always seeming just within measurable reach of success. And at last it came. She discovered the vibratory rate necessary to make travelling through time a feasible proposition.

Yet even then much remained to be done. She must search backward through time, a long and wearying process, for the data on which she had to work was meagre. Some of the alleged discoverers of the power she sought must have been charlatans, since there was no record of their discoveries ever having been put to practical use, an unthinkable thing had they done what they claimed. In this she overlooked one solitary possibility.

HER SEARCH began. She left her world almost in despair. So many things had failed that they had little faith in this last hope. She came back through time, pursuing her enquiries. The people of other ages treated her badly. She met with incredulity, contempt, derision, everything but belief and help. In some eras she was even regarded as a mad-woman. Once, during one of the Interplanetary wars she was treated as an invader, and barely escaped without injury. The machine itself was slightly damaged before she could get it to start.

At length she came across one item of information that looked explicit. A scientist in the year 1985 had made the discovery she sought. His word had been doubted; he had been jeered at, and when at last he had succeeded in convincing the world, his experiments were regarded as too dangerous to be allowed to continue. In a fit of pique, anger, or because of broken hopes—call it what you will—he destroyed his apparatus, everything that would throw any light on what he had done, and ended by destroying himself and his laboratory. That, it seemed, was what actually happened, though popular account had it that an experiment had gone wrong.

1985. The year of the great discovery. To Leela, it appeared, that if she could reach the man while he was in his first flush of enthusiasm, before he found his invention and its possibilities ignored, she might get the formula from him, might even persuade him to return with her.

But the damage to her machinery had thrown her calculations out of gear. She landed in my year, as I have described. She could not face the prospect of travelling alone again, and the need for company was what actually decided her to take me with her.

Several points, made by no means clear to her, presented themselves to me.

All isn't lost yet," I tried to console her. "Perhaps if you can repair the machine you can travel back again, find the man and set your return for a date here before the others have perished."

She shook her head. "One factor I

have overlooked," she pointed out. "The past is immutable. I cannot go back and change the order of things. They have happened in a certain way. I cannot make them happen in any other. The future, yes, that I can influence. Events yet to come are still in a state of flux. The future can be moulded, but the past, no. To make it clearer, there is no record that I ever reached that scientist of the year 1985; there is no record that I succeeded in my mission and returned in time to save my people. Therefore, it is hopeless to try. I should have realized it before."

"But you have taken me out of the past," I protested. "Is that upsetting the order of events?"

Again she shook her head. "No," she said. "Somewhere it has been recorded—you will find that—that you made this time trip, that you and I met. If you had lived your life without our having met, I could not have gone back and brought incidents into that life that had never occurred. You understand?"

"Dimly," I said. "I fancy I see what you're driving at. But tell me why you should have come back to your own era and found you were too late? I should have imagined that you have been able to have returned to the exact date you left."

"Let me explain. This is how it presents itself to me. When I travel in time the process is to all intents and purposes instantaneous. I do not expend time, so to speak, in the way that I expend power. I do not live that time. I merely pass through it. But when I reach any desired era and stop travelling time begins again for me. I spent fifteen minutes stationary in your year, talking to you. That is fifteen minutes out of your life-period and mine. You have that fifteen minutes less to live."

"My searchings through the centuries cost me the matter of a year, in accumulated time, outside of the influence of the time machine. That year also has gone out of my life. It is part of the allowance of my existence that I have expended. For instance, now I can see that I could not possibly have returned here to the exact date

on which I left. The amount of time I spent in other centuries when I was not actually time-travelling amounted to a year. That year must be subtracted from the sum of my existence. Therefore I arrive back to find that a year here has elapsed in my absence."

Nearing the End

"**T**HEN," I said, "if I were to remain here a year, and then could return, I would find it 1936, not 1935?"

"That is it exactly," she agreed, then looked at me with wide-eyed horror.

"But," she said slowly, "the machine is broken."

"You may be able to repair it. There is no harm trying."

She thought with knitted brows during one long, pregnant minute.

"Why not?" she said at length. "There is nothing to stop your returning in that case, even if I cannot go."

"You may be able to come with me," I suggested. "There is no reason why you should not. Even what you have told me does not debar you. Your life span is such and such. You must live the full period allotted to you, either here or in some other era."

There may have been a flaw in my reasoning. Perhaps so. Perhaps not. At any rate she seemed convinced. No doubt she wished to be convinced. Also I was a man and she was a woman, not altogether repugnant to each other, and whatever else had changed, a million years had wrought but little alteration in the fundamentals of human nature.

At least she set to work with an almost feverish haste. But for my suggestion I really believe she would have done as the others, let in the cold of space and die by her own act, reasoning it was far better to pass out in a few moments of exquisite agony than linger day by day, each day seeing the thread that bound one to life grow frailer and thinner until at last it snapped.

But I—I flatter myself—gave her something to live for. Nothing much. Scarcely

a worthy object, no doubt. But there it was, the human heart being what it is.

I could not help her. She would not let me, preferring to work feverishly and alone. I occupied my time in various ways. I could not go outside the building in which we were housed. To do so would have been to court the frozen death. I had my camera with me and I had a supply of films, and I would dearly have liked to have taken many photos. But I compromised. Some of the television screens were still functioning; their power had not yet drained; and by their aid I secured some photos worth preserving. Whether they would be credited I could not say. At least, as records, they were worthwhile to me alone.

Daily the red disk of the sun grew more dim, and daily the cold increased. The glass surface of the building now was frosted over so that it was opaque. We began to feel the chill bite of it in our bones. The power that warmed the building was running out. Yet I was heartened by Leela's announcement that a few days more would see the repairs completed. I could have wished that she would let me help her, but every time I broached the subject she refused my offer, saying that it was work that only one could do, that it was intricate and that with my lack of knowledge of the subject I would be more of a hindrance than a help.

However, I found much to occupy me. The building itself was a storehouse of strange appliances. I had wondered quite a lot since I had arrived why the power that warmed the building should have lasted so long after the power seemed to have run out in the buildings—one might almost call them cities—that had once been inhabited. The answer was very simple, it seemed.

The building was small compared with those others we had seen on the screens; the amount required to warm it was not great, and since it was something in the nature of stored solar energy it could be kept unused for quite a while. Leela, as a matter of fact, had started the motors immediately after our arrival, and only run them at half-capacity since. Knowing there was no

way of replenishing the supply once it was exhausted, she had been careful about that.

One discovery I made while her work held her to the machine. In one of the compartments at the furthest end of the building—one that we seldom went to, since the cold there was more intense—I discovered a series of apparatus not unlike the switchboard of a telephone system; and exploring further I found head-phones. One day in an idle hour I put on a head-set, and snap on one switch after another, simply to see what would happen. Great was my surprise to hear a voice in my ear.

I nearly dropped the phones in my excitement, then recovered my equanimity as I realised that I was listening to something in the nature of a mechanical reproduction, a phonographic record, or whatever corresponded to it in this age.

MY idle working of the switches had released one that set the machine in operation. I listened to the end—a short record it was—and then switched back. Sure enough the voice, metallic and measured, began all over again. I had paper and pencil in my pocket and for reasons of my own I took a transcript in short-hand of what the voice was saying. That finished, I looked round the switchboard to see if there was anything that would show me where the voice was coming from.

There was much that I did not understand, but I was able to puzzle out enough to realize that the record I had heard was being transmitted from that building we had first seen in the television screen. Probably it had been so adjusted that anyone attempting to call the place would immediately set the machinery in motion.

I went back to Leela in a thoughtful mood. The moment I reached her I could see by her face that success had come at last. She had repaired the machine. We could start as soon as I liked. The news decided me to say nothing about my own experience. Yet on one point I must satisfy myself before I allowed her to take the decision.

"Leela," I said, "are you prepared to

come back with me to my own age, to stay with me there always, and never know a life apart from me?"

She looked at me oddly, I thought. "Why," she said, "do you ask that?"

"Because," I answered steadily, "I would not care to think that you were doing this simply to save me from being marooned here in time. In the while we have been together I have grown to think of you as someone I would not care to have pass out of my life again. You have brought something into it that it had never known before—love!"

"And you, too," she said softly, "have brought it to me. If I were not going back with you, I would not care what became of me. I have failed in what I tried to do; I have lost all my own world held for me, and had you not come to make up that loss for me, I . . ."

She did not finish, but said abruptly, "Let us go before I begin to say foolish things."

We went. I think in one way she was reluctant to go, for she shed an odd tear before she put her hand to the key-bank, and moved the lever that would bring us back to this year of grace.

We arrived on the very spot where we had taken off. I made a careful calculation before we ventured out, found that we had spent two months and three days away, and satisfied of that we opened the door and stepped out into the fall sunshine of a living world.

"What will we do with the machine?" I said, as we turned and stared at it. "It will be a bit difficult to explain away, won't it?"

"This," she said, answering my first question, ignoring the other.

I saw then that she held a length of cord in her hand, and that the other end of it disappeared into the machine itself. Even then I did not realize what it was she intended doing. Abruptly she jerked the cord. It was twitched out of her hand. The machine itself rocked crazily, seemed to dissolve, and before my astonished eyes vanished utterly.

I totok a step forward and caught her by

the arm. "What have you done?" I cried.

"Sent it back to my own time," she said. "It is better thus. Without it I will not be tempted . . ."

To do what she would not say.

That is three years ago. We have been very happy since. No cloud has marred the serenity of our lives, yet sometimes I fancy Leela's thoughts go back—or forward, if you will—to the days that are yet to come. It has taken me all that time to summon up courage to tell her of that last experience of mine in, what for want of a better term, I call the telephone room of the building that was her experimental laboratory. To my surprise she took it better than I had hoped.

"They did not think you would return," I told her. "They believed you had failed and were lost in time. But they prepared in case you did come back. There is the chance that they were not dead, that many of them are but in a state of suspended animation. There was a new discovery made while you were away, a drug somewhat similar to that we call avertin. It could suspend animation completely over a short period, but whether its effects would be lasting over years was problematical.

"Some of the population were willing to try at any rate, and were given the drug. From first to last it was all a pure gamble, you see. A few of your scientists believed that the solar system would pass out of the region of this strange gas—call it that—in a century or so, but they admitted they might be wrong. The majority were almost certain the Earth was doomed. They hoped that if it was not, that if this was but a passing phase the warmth of the rejuvenated sun would bring life back to those who were in a state of suspended animation. They gambled on everything, on the potency of the drug, its ability to protect against the inevitable cold, gambled on their hopes that the sun would once again shine out as before.

"Nowhere was there any degree of certainty, for they were dealing with exceptional circumstances, and had nothing on which to base their calculations, other than the hopes they had in mind."

"No, I do not blame you," she repeated at the end. "You did what you thought was for the best. Had you told me then, when my mind was in turmoil, I might have taken a course that I would have regretted afterwards. No, I do not regret I am here with you . . ."

But what else she said does not matter.

Nevertheless the fact remains that Leela has the knowledge and the means to build another time machine, and, if she will, to send us travelling again. We have discussed the matter between us without reaching

any definite conclusion. Were we to go forward again, a century or so ahead of her day, we might find the world awakened once more. On the other hand we might not. It would be more than heart-breaking to find at last a world locked in a slumber that had become eternal. While we do not know for certain we can sustain our minds with the hope of possibilities . . .

Yet I do not know. Some day we may decide to build another machine, take the risk of black disappointment, and solve at last the enigma that perplexes us both.

THE END.

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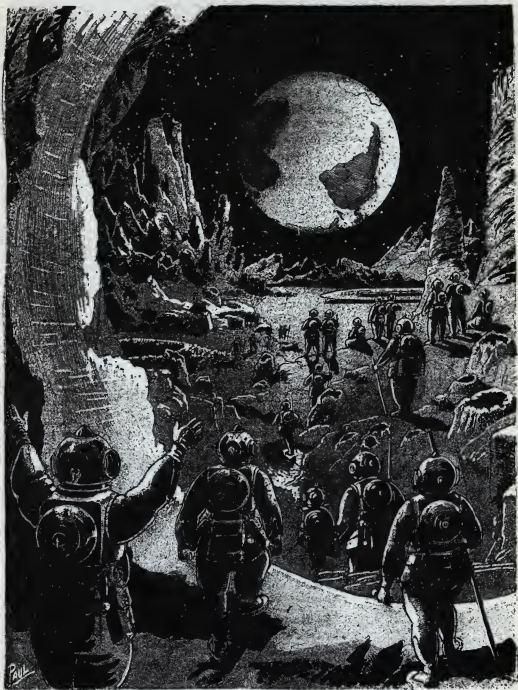
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on all newsstands September 15.

Exiles of the Moon

By Nathan Schachner and Arthur L. Zagat



(Illustration by Paul)

They streamed out into the frigid blackness, to gaze long-
ingly at the beautifully serene earth.

What Has Gone Before

IT is the year 2240, and Garry Parker is a New York-Berlin rocket pilot. He is in love with Naomi, daughter of Henry of the Fentons, one of the five rulers of the earth. Since Garry is one of the billions of enslaved Workers and Naomi is an Aristocrat—of the ruling class—they cannot marry. Naomi is being forced by her father to marry Sadakuchi, son of Hokusai, another of the five world councillors. By this alliance, Henry hopes to control a majority in the world council.

Naomi has but a week before her marriage. She and Garry hope to effect some plan to evade it. But Garry returning from a flight is ordered to another part of the earth. Seeing his plans going astray he refuses the order and as punishment is ordered to be sent to an Idler's Colony, a colony of rebel workers in an uninhabitable part of the earth.

Naomi learning of this tries to intercede with her father, but Henry then orders a more drastic punishment for Garry. He is sent with a load of other rebel workers to a mysterious island of the Pacific from which no Workers have returned. Also on the

cargo is Purtell a former chemist.

The Workers are landed on the Island, which has been supplied with the almost extinct cows, and soil for farming. The Workers have presumably been condemned to earn their own sustenance here. Garry is elected their leader against the opposition of Jerte Farr. He ascends the top of the Island mountain to investigate it and discovers a crater filled with a poisonous gas—the level rapidly rising. He realizes now that the Workers are to be suffocated when the gas overflows into their settlement.

At the suggestion of Naomi, who has stolen into the expedition, they strip the cows of their hides and build coracles to paddle to the Island of Ileva, miles away, where there is a detachment of police. They overwhelm the police, and steal a rocket liner. The gas is found to be a catalyst for oxygen and a voyage to the moon is deemed possible with it. Because they are outlawed on earth, the exiles set off for the moon. On the way Dore Swithin, one of the men, is blown unprotected into space and Garry putting on a space suit goes out after him.

Now Go On With the Story

GARRY swore at himself. What twenty different kinds of a fool was he not to have thought of a pocket ray-director! How was he going to find Dore, when split seconds might mean death from horrible strangulation?

And if he himself remained out here an hour or so, the glacial space-cold would get him. The chemical heat units had not been installed in the space suits. All because he had not thought of the ray-director!

Already he had lost all sense of direction. Dore might be within arm's length, yet he might as well have been light years away. Any move he would make might propel him irrevocably away from the doomed man.

What a dilemma to be in! Here he was, floating in airless space, feeling no weight, not quite sure whether he was topsy turvy or upright. He was seemingly at rest, yet in reality streaking along at a speed far in excess of the fastest bullet. What was he to do?

He awoke from his inaction—set his teeth together with a snap. Find Swithin, of course. After that—

He snapped up the recoil^opistol attached to the suit and squeezed the trigger. Only a certain tension followed by a feeling of relaxation told him he had moved for there was no air to resist his passage. He might just as well have been a disembodied spirit.

For what seemed hours he moved about by the recoil shots, becoming agonized in his desperate anxiety. Something cried within him—Dore must be dead by now—give up—turn around—try and save yourself.

A Race With Time

BUT an indomitable will carried him on. He must locate Dore first. As for turning around—which way was around?

What was that? His enclosed hand encountered something! His heart gave a great bound! Was it Swithin? Frenziedly he grasped at the obstruction. His hand slid around it. Unmistakably the body of a man! A moment of fierce exultation, followed by realization. The body was limp, inert. Dore was dead!

Nevertheless he clutched the invisible corpse. It was easy to move—both of them were comparatively weightless.

Breathing a fervent prayer, Garry shot his way toward the ship's bulk.

His free hand struck an obstacle. It was the ship! He screamed in sudden hysterical relief. He had not realized how close his nerves had been to snapping. Now renewed strength flowed through him.

Holding Swithin's body in a tight^oembrace he edged his way along, until, with a great sob of thankfulness, he found the edge of the open air-lock. Painfully he

dragged himself through, fumbled for the cold light switch, pressed it. The walls sprang into a steady luminosity. He swiftly shut the side behind him, sprang through the chamber, slid open the inner door, and fell headlong into the bright light of the hold, safe at last!

The shouting, jostling, excited Workers crowded around him, almost overwhelmed him in their welcoming rush.

A slender figure darted forth from the milling mob, threw herself upon his enclosed form. It was Naomi! Tears streamed from her eyes as she called upon him: "Garry darling, oh my dear! Is it really, truly you? I can't believe it. Thank God you were spared!"

Garry could not hear her tremulous words, but he guessed the import of her moving lips. A wave of warmth glowed over him for this beautiful, erstwhile proud Aristocrat.

Then he started. The deathly pale swollen face of Dore Swithin stared up at him with closed eyes. Feverishly he worked at his helmet. Purty was plunging through the crowd like a battering ram, his freckled face agleam with unalloyed delight. "Glory be, you made it, Garry!" He turned fiercely at the pushing people. "Get back, all of you, stop shoving, or I'll haul off and hit you one." The Workers pressed back hastily.

Bill took the inanimate figure away from his chief.

His brow clouded at the sight of Swithin's

pallor, his limpness. "Poor fellow!" he said softly, "he's dead."

Garry had ripped off his helmet, flung it aside. For a brief moment he held Naomi close to him, then he too gazed sadly at his loyal comrade.

"Did all I could to save him, but it was too late."

"I know you did, Garry," Bill protested warmly.

"How long was I out there. It must have been almost an hour, eh?"

Purty stared at him as though he had gone out of his mind. "Almost an hour?" he echoed, "say man, are you crazy? You've been gone exactly—", he snapped his wrist chronometer, "you've been gone exactly four minutes!"

"What?" Garry sprang forward, seized Bill's wrist with fingers that dug painfully, "say that again!" "Hey, what are you trying to do, break my arm? Let go, feller. What do you want?"

Garry dropped the offending hand, but insisted fiercely. "Swear it was only four minutes!"

Somewhat taken aback at his partner's strange demeanor, Bill nodded. "Yeah, so help me—"

But Garry listened no further. He snatched Dore's lifeless form from Purty's arms, disregarded the startled protest. There was the flame of a new hope in his eyes, his voice held an exultant ring. "Quick, to the ship's hospital. Help me with him. We'll save him yet!"

Bill was sure now his chief was crazy,

THE second installment of this extraordinary story brings us to some of its most stirring phases. We have seen a brave band of men, on the way to the moon, to find a haven there from the death or enslavement that awaited them on earth.

They are going to an airless, lifeless world where they must find a means of sustenance for themselves—air, food, protection from the extremes of temperature.

Our authors do not attempt to gloss over the tremendous difficulties that the exiles will face. They have written, so far as we know, the first story of a colonization of the moon, with its hardships portrayed in a pitiless light.

It is quite possible that in the future, such an attempt at colonization may be made. And when that time comes, the same obstacles must be faced as will confront our "exiles of the moon."

but Garry gave him no time to voice his thought. He slung the lifeless man over his shoulder, flying through the ship. His ungainly suit impeded him somewhat. But Purty had caught up to him, snatched at Dore's legs, and they were off in a wild scramble against time, a disordered stream of Workers behind them, curious, yet not knowing quite what it was all about.

WHEN they reached the hospital bay, Garry dived straight for the release lever of the pulmotor-reviver. The intricate apparatus slid out from its concealed storage place. Working frantically, aided by Bill, who had caught the idea by this time, they laid the pallid, breathless body on the flat base, strapped it down, clamped the oxygen cap into position over the mouth and nose, started the machine.

As it heaved into action, the pair stepped back, breathless with anxiety.

Naomi darted to Garry's side, squeezed his arm with a fierce pressure. The hospital bay filled with awed Workers, all eyes glued to the prone figure that was being worked on by the machine.

Minutes passed, and still the congested, mottled body was lifeless. Despair settled slowly on the watchers, but Garry refused to give up hope. He kept the reviver in action, searching ceaselessly for the first semblance of life.

At last he was rewarded. A little flicker of the pallid eyelid, a faintly etched quiver on the cardiograph chart that showed the heart had resumed its functioning. A great cheer went up. Garry held up his hand for

silence. The color was flushing back into the white cheeks, the line of heart action had smoothed out to a steady even pacing, then a little groan that forced its way through blue lips. Dore was alive!

Garry and Purty quickly stopped the machine, unstrapped their comrade. His eyes had closed, he was not yet conscious, but the moans came with increasing frequency.

There were no doctors among the Workers, but several of the women had been nurses. They came forward now and took command of the situation with some of their old imperiousness. Ordering everyone out of the hospital, they went deftly about their

ministrations of the man returned from the dead.

The excited crowd milled into the main cargo space. Naomi turned to her lover, adoring, yet puzzled.

"I know you've just accomplished a miraculous thing, but how was it possible? It is inconceivable

that Swithin could have existed in the absolute zero of open space for an instant. Yet he did! How?"

Garry nodded in somewhat satisfied fashion. He looked around at his comrades, and the same question was written large on every face.

Speaking ostensibly to Naomi, he yet addressed the larger audience. It was time to explain.

"You remember when I first said we could live on the moon, you were doubtful? And some of my friends here were openly sceptical."

Cries of "That's true!" burst about him. "Well!" he continued, "Poor Swithin has



ARTHUR L. ZAGAT



NATHAN SCHACHNER

proved my theories more dramatically and more effectively in the four minutes he spent outside than all my lecturing and figures could have done in a year. Listen!"

His audience crowded closer about him, eager to drink in every word.

"We know that interstellar space is practically a vacuum, and frigid with a temperature of not more than two or three degrees above the absolute zero. We know what would happen to a man's finger if he thrust it into one of our tanks of liquid oxygen, which is much higher in temperature. It would freeze solid almost instantly, and become so brittle it could be broken into little bits. Naturally it was assumed then that the same thing would happen to a human being subjected to the terrific cold of space.

"However, that is not so, as we have just seen. Heat may be lost by a body in three ways, by *conduction*, by *convection*, and by *radiation*." He paused for a moment to let this sink in.

"Now radiation is the *only* method by which a body can cool off in a vacuum, such as exists in interstellar space. And loss of heat by this method is very slow. Just think of the old 'Thermos' bottles. The thin shell of vacuum enclosed by their double skins of glass was found to be an almost perfect non-conductor of heat. Liquids could be kept warm for forty-eight hours in them, since the only way the contents could lose heat was by *radiation*. The amount of loss can be readily calculated from known laws of thermodynamics. I have found it would take over an hour for a human being to lose sufficient heat by radiation so that life could not be sustained.*

CHAPTER XIII.

Nearing the Moon

HE paused dramatically. "Swithin was not frozen when I brought him in. He was suffocated, almost dead, because for four minutes he had no air to breathe! And the internal pressure of his body accustomed to atmospheric pressure almost killed him. Fortunately he has survived."

"That's wonderful!" Naomi breathed. She had been a rapt listener. "But how will this enable us to live on the moon? Suppose we do manage to exist for an hour or so after we land, what good will that do us?"

Fearful nods from the encircling Workers showed their utter agreement.

"Simply this," Garry explained. "We shall have to use our space suits of course, both for maintenance of needed pressure and for oxygen to breathe. We'll land, if we can, on the dark side of the moon. There conditions approximate that of outer space—no air, and almost absolute zero temperature. On the bright side, we'd be broiled alive by the fierce heat of the sun. Now, since the heat loss is so small, about one degree Fahrenheit every ten minutes, the chemical heaters in our suits could very easily offset this loss.

"Then all that would be necessary would be for us to dig ourselves into underground, air sealed shelters as fast as possible, and arrange for heating and air supply."

A little murmur of dismay broke from the assemblage. "Not a very pleasant outlook for us," Rade Perrin interjected, voicing the general thought.

"You're quite right," Garry agreed with a shrug. "But it's the best in sight. Back on our own earth we're outlaws, condemned to death."

*In order to calculate just how long man could live in the absolute zero of space (if he had air to breathe), Parker assumed that the average human weighs 150 lbs., possesses a surface area of 20 square feet, and that a drop in internal body temperature of 10°F. would be sufficient to cause death.

If we consider man's body to be an ideal radiator, the thermodynamic formula applying is:

$B.T.U. \text{ per hour radiation per square foot is } 16 \times 10^{-8} (T_1^4 - T_2^4)$ where B.T.U. are British Thermal Units, unit of heat measurement.

T_1 is the absolute temperature of the human body, or 59°F.

T_2 is the absolute zero of space. Making the necessary substitutions, we find there would be radiated 160 B.T.U. per hour per square foot, or for 20 square feet of surface, 3200 B.T.U.

Since rate of radiation is an inverse function of mass, for man's weight of 150 pounds, divide by 150. Then by 60, to obtain result expressed in minutes.

The result indicates a loss of 1/3°F. per minute. But man's body is by no means an ideal radiator; in fact it is almost three times as slow.

To apply our results to man, we obtain 1/9°F. loss per minute.

Now a loss in body temperature of 10°F. is fatal, whereby it is readily seen that man could exist in the cold outer space without heating aids for 90 minutes before succumbing.

We have not taken into consideration the fact that the constant generation of heat within the human body might not help to offset this small loss, thus extending the time limit.

Jeris Farr inched his way forward. He had been keeping discreetly in the background since his attempt to wreck the flight, but the manifest discontent of the Workers with the drab uninviting future emboldened him.

"You see, comrades," he declaimed in his gruff, pseudo-hearty manner, "it's just what I'd been telling you. You're dupes, that's what you are. A pretty life ahead for us all, isn't it?" He laughed scornfully. "Live under ground like moles all your lives, never a breath of fresh air, nor a sight of the heavens; we'd be better off dead, that's what we'd be. I for one am in favor of turning back, giving in to Sadakuchi. He promised us mercy if we gave up those three."

He pointed at Garry, Naomi, and Bill Purtell. A rising murmur accompanied his outburst; it would take but little to translate it into revolt.

Purty saw and heard. He stepped into instant action. His long hairy arm shot out, caught Jeris by the scruff of the neck. He addressed his victim incisively, punctuating his remarks with vigorous shakes..

"Listen, feller, we've had enough from you. You're going back, all right, but all alone! Out the air-lock for yours, and there'll be no rescue act this time, either."

With that, he started to drag the struggling Jeris through the astounded Workers.

"Hold on there, Bill," Garry commanded. "No rough stuff."

Party paused disgustedly. "It's your funeral if you don't throw him out. I told you he's due to make trouble as long as he's alive."

A few of the workers stepped forward quietly, ranged themselves alongside. Loyal men all of them! Rade Perrin, Brad Quinlen, and others of their kind.

Brad spoke up. "We're with you, Mr. Parker. We know what awaits us back on earth. We'll go to the moon, or to Mars, if necessary, where at least we can be free men, and alive. Of course it won't be a bed of roses, but we'll make the best of it. As for Jeris Farr," he turned a look of cold contempt on that individual, "it would be wiser to do with him as Mr. Purtell suggests."

"Thanks Brad," Garry responded gratefully. "I knew I could count on you, and the others. But we're not killing anyone, we'll leave that to the Aristocrats back home."

Bill released his captive reluctantly. Jeris made off as fast as possible, fearful that Garry or Purty would change his mind.

GARRY dismissed the incident with a gesture. "That's that! Now for more important matters.

"Every one to his post. We're fast approaching the zone of the moon's attraction. Within a few hours we'll have to employ all our skill to avoid a horrible smash-up. Our plane wings will be useless. Remember, men, if any one neglects in the slightest, the tasks assigned to him, it may mean the death of us all."

Garry's grave voice shocked the muttering malcontents into silence. Without a word they hastened to their posts.

"I don't think we'll have any more trouble now," Bill remarked. "You've scared them plenty."

"It's the truth, though," Garry answered soberly. "Any slip up, and we're through. I hope I'll be able to manage it."

"You will, darling, I know you will," Namoi cried impulsively.

"Maybe," Garry shook his head doubtfully. "Well, it's no use worrying about it. Let's get back into the control room, and get busy."

Through the periscopes the moon, a vast gleaming disk immediately below them, was visibly rushing up to meet them. Garry rapped out a perfect barrage of orders. Forward rockets were fired in searing blasts to check their mad drop.

At three thousand miles from the surface, the starboard rockets were let loose in continuous bursts. The great liner swerved in its course, slanted athwart the moon's surface.

"Can't check ourselves fast enough to land in a perpendicular drop," Garry explained.

Around the moon they swept, in a vast concentric spiral, dropping closer and closer on each circling. The third complete cir-

cumnavigation brought them within five hundred miles of the craggy, volcanic crust. The forward rockets were brought into play, in tiny staccato bursts. Garry dared not use full power, as the ship would be instantly clothed in sheets of flame. Anxiously he watched the heat indicators. It was getting very warm inside, but it was bearable. The outer sheathing was an excellent insulator.

At fifty miles up, the speed had dropped to five hundred miles an hour. Garry changed the direction of their flight.

"We'll land rear of the South Pole," he told them.

A hasty glance at the dials. "Everybody into his hammock. Strap in!" he shouted. He swung himself into the oscillating net near the instruments, made sure Naomi and Bill were safely ensconced, heard the last 'Ready' report, shouted "Now!" and pulled the lever that opened the forward and under rockets full blast.

A violent concussion shook the ship, blinding flashes pierced into the chamber through the open periscopes, and the next moment there was a terrific crash. Stunned and shaken, Garry's first thought was for Naomi. She was already unstrapping herself, pale but smiling.

Bill got up slowly, and grinned ruefully. "Must have swallowed a few teeth. So we've landed on the moon, eh? The least the inhabitants could have done was to have provided a few cushions."

"Come on," Naomi cried eagerly. "Let's get out and explore. I just can't wait to see our new home." Her cheeks were flushed, her black eyes were dancing. She was like a little girl in her enthusiasm. To Garry's enraptured eyes she was even more beautiful than ever. The last traces of the Aristocrat's hauteur had disappeared.

"Hold on," he laughed at her happiness, "we can't just step out, you know. There are preparations to be made."

"Hurry them up then," she demanded. "Remember, this is to be our home, our home, Garry!" Her eyes were pools of tenderness.

Garry yearned to her. "And you are not sorry? Remember, it will be quite differ-

ent from what we all, and especially you, have been accustomed to.

Naomi stopped his mouth with a warm palm. "I don't want to hear any more," she cried, "we've gone over that before."

Partly was waxing impatient. "Hey, you two love birds, wake up. There's work ahead."

The First Exploration

"RIGHTO!" Both were all contrition. Out of the control room they ran, to be met by a wildly excited, laughing, crying mob. Gone were the animosities, the grumblings, the fears that had permeated the heterogeneous group. All were eager for the great adventure, for a first glimpse of their new home. Jeris Farr only, and two of his cronies, with dour faces held themselves aloof on the outer fringe.

"Are the space suits all in order?" Garry demanded of Rade.

"There they are, numbered for each individual, oxygen apparatus adjusted chemical heaters set for slow combustion." He pointed to the neatly arranged tiers of the suits.

"Good. We'll make up a little party of exploration to test out the terrain. Purcell, and you, Perrin." Garry, Bill and Perrin got into their space suits. The last helmet was tightened into position. Garry had inserted communication disks so that they would be able to talk to each other. The chemical combustors were adjusted for slow heat. The oxygen supply would last for six hours. Heavy lead weights were attached to their feet to counteract the lessened gravity pull. Everyone crowded about them, wishing them luck, offering advice. Garry looked around. He did not see Naomi.

"Where's Naomi?" he asked anxiously.

"Here I am," a merry voice answered. He whirled and found her standing directly in back of him, ungainly in a space suit.

"What's this?" he questioned her in amazement.

Her happy laugh was triumphant. "Just that I'm going along too. A Fenton never stays behind."

"But—" Garry started to object.

"S no use, feller," Purty's gruff voice reached him, "these gals are all alike, Aristocrats or Workers. Once they make up their minds, you might as well save your breath. There's no argument. I know the symptoms."

"Thank you, Mr. Purtell, for recognizing the inevitable," Naomi flashed at him.

"Very well then," Garry interrupted, "you're coming. But please remember to be careful." He raised his voice. "Every-thing in order?"

"Right!"

He stepped into the air-lock, the others trailing behind. The door closed behind; a pull at the lever, and the outer seal yawned.

Out they stepped on the surface of the satellite, awed and a bit fearful, the first people to ever stand on that desolate orb.

A strange scene waited their amazed eyes. Their weighted feet crunched into a soft, crumbly, pumice-like material. All about them was heavy, palpable blackness. Overhead a greater moon — the Earth — rode queenlike and myriad stars pricked the mantle of black. Garry could easily pick out his companions in the luminous earth-shine.

But what brought an exclamation to his lips was a glare of dazzling white immediately to the left, not more than five hundred yards away, so dazzling that it blinded his eyes. Beyond, the light stretched interminably away. Little cries of astonishment broke from the others.

For a perfectly definite line of demarcation, the terminator,* separated the brilliant area from the blackness, a line that stretched undeviating north and south as far as the eye could see. There was no blur, no shadow, in that amazing division.

"That we're in luck," he replied happily. "We couldn't possibly have made a better landing. That glare over yonder is from

the sunlight. We're on the night side of the moon. For approximately fifteen days we will be in darkness, then the sun will pay us a visit."

"What'll we do then," Bill spoke up, "stew in our own juice?"

"If we stay here," Garry agreed. "But that's why I chose the South Pole for a landing. The area of day, of light and heat, is comparatively narrow. All we'll have to do is shift over a few miles, and be on the night side again."

"Fine business," Purty retorted ironically. "We'll be—what did they call 'em—Bedouins of the Moon,—fold up our tents regularly every fifteen days and unpack again."

"OH, the chances are we'll find plenty of caverns around here. We're not so far from Tycho, you know. Then we can dig in, and hibernate during the long day. But no use discussing that now! Let's get a look around."

With ray-beams that sent a powerful gleam over their surroundings, they moved carefully over the crumbly ground.

It was a wild weird landscape that the flash picked out. Great towering crags jutted unimaginably high in the pale earth-shine, huge massy rocks were tumbled in indescribable confusion as though a race of giants had heaved segments of forgotten planets at each other; while under foot was the yielding pumice in which they bogged. And always, beyond the terminator, was a dazzle that seared the eyes.

Garry warned his companions to keep close to him. He proceeded warily toward a beetling cliff that sprang sheer from the disheveled plain. Perhaps there at the base, he would find what he was looking for.

Suddenly, Rade Perrin stumbled and almost fell. He uttered a cry. The others came hurrying over, alarmed.

"Look at this," he said, turning his ray-beam downward.

A gleaming white marble-like surface sprang into the illuminated area. Rade swung his beam back and forth, disclosing the extent of the white substance to be about fifty yards across. North and south,

*Since there is no atmosphere on the moon to hold heat and diffuse light, the demarcation between the glaring light and boiling heat of day, and the impenetrable dark and frigid cold of night is a distinct and sharp line. This is called the terminator, and moves completely around the orb of the moon in a terrestrial month. In the vicinity of the pole, day and night would alternate within a range of only a few miles.

however, no matter how far he threw the rays, the gleam of white continued.

"This must be one of the mysterious rays that radiate from Tycho. Earth scientists have been puzzled to explain them. Maybe you can tell us something, Purty."

"Maybe," he grunted, bending close to the strange white material. He examined it closely, playing his ray-beam over its structure.

"That's queer," he straightened up finally. "I've never seen stuff like this on earth. It has the hardness and polish of marble, yet it actually is a sponge-like material, honeycombed with tiny cells. I'd like to take a sample of it back to the ship—it looks interesting."

"On our way back," Garry remarked, "We've got to find some place we can dig in, if it's possible!"

They crossed the glimmering white path, plodded heavily through the dusty pumice toward the high craggy overhang that was their goal.

A great welter of rock awaited them, piled high in confusion. A jagged gash in the crag showed where the tumbled boulders had split off and crashed down. The avalanche might have occurred unimaginable ages ago or but yesterday—there was no telling.

"Hello!" Rade's flash picked out a gleam of white in the mass of riven debris. "Here's some more of those Tycho rays."

"That's funny!" Bill announced, "I thought they went in straight lines. How'd it get over here?"

"They do," Garry agreed. "Must be another one that kept on its course over the top of the cliff, and the avalanche smashed it up, dropping segments down here."

A faint shout called their attention to Naomi, who had been climbing in and out of the giant heap with utter disregard of the risk of the whole delicate balance collapsing.

"Come here, quick, all of you!" Her voice was alive with excitement.

Following the reflected flare of her ray-beam, they dived through a series of interstices, Garry racing in the lead. Had Naomi

been caught somewhere within under a fallen rock?

To his unutterable relief, he came upon her in a natural chamber caused by over-arching boulders, alive and unhurt. She beckoned to him impatiently, pointed a wavering beam at a smooth round hole in what was evidently the side of the cliff.

"Garry, Garry, that hole—it's artificial; nature never smoothed anything like that."

By now Bill and Rade had hurried up, and they all stared. The orifice was some fifty feet across, absolutely circular, and angled off abruptly into the bowels of the cliff, so that their beams could not penetrate very far. Segments of the peculiar white material were scattered in profusion over the base of the passageway.

Garry shook his head sceptically. "It's impossible. There's no life on the moon. It's just a natural freak; there are plenty of similar examples back on the earth."

"I'm sure it was made by intelligent beings," Naomi insisted, "and I'm going to find out."

Without more ado she darted forward, a strange figure in her ballooning space suit, and in the instant way flying down the passageway.

"Come back," Garry shouted in alarm. But there was no answer. Naomi had disappeared as though the moon had swallowed her up.

With one accord, the men raced after her, Garry muttering to himself at the headstrong, wilful girl he loved.

CHAPTER XIV.

Into the Depths

DOWN the black cavity they plunged, down an ever steeper incline. The shattered white blocks littering the slope started from underneath their feet in a little avalanche, all the more terrifying because it was soundless.

Garry halted his wild plunging, shouted in his disk for the others to do the same. Beneath his helmet his face was gray with fear.

"Good God, we'll kill her if we're not

careful." He raised his voice and cried again and again. "Naomi! Naomi!" But no answer came back to him; only the frightful silence of the airless moon, in which his labored breathing was magnified a hundred fold.

Perrin's voice came to him, strained and thin. "I'm going after her, Mr. Parker. I can't stand here like this when maybe she is suffering somewhere below, trapped. God!" And off he went, while there flashed through Garry's agonized thoughts: "That boy, he's in love with Naomi!"

But all he said was: "Watch those rocks; don't start them sliding again."

With infinite care they picked their way down the descending path. The ray-beams flashed from smooth black arching walls, flecked with tiny iridescences.

"Say, Garry," Purty's voice resounded in his helmet, "Naomi was right—nature never turned a trick like this."

But Garry did not heed. Where was Naomi herself? That was the most pressing matter in the universe to him just now.

Far ahead a gleam of light flickered irregularly against a black surface, and was instantly swallowed up in the blackness. Garry's heart gave a great heave.

"Naomi!" he shouted again, and strained to listen. Was he mistaken, was it merely the echoing of his hammering pulse, or was it really Naomi's voice, weak, far-off? There it was again—"Help, help!" as though it came from a distant planet.

Rade had heard too, for Garry could hear his sudden exclamation, as he shot recklessly ahead. Down, ever down, they slid and fell and tumbled. Naomi's voice was still ed, there was no further sound! Suddenly the ray-beams flashed against a basalt wall, barring further progress.

Garry saw the yawning irregular gap first, screamed a warning. Purty pulled up in time, but Rade could not stop himself. He slithered down to the edge, tried to recover his equilibrium, could not. His hands went up and the next moment he catapulted into the unknown.

Garry's flesh crawled as he ran to the brim, flashed the ray-beam into the fearful depths. Purty was talking desperate-

ly. "Keep a stiff upper lip, old boy. They're both all right; I'll bet an old hat on that."

But Garry's voice was strained, unbelieving. "My God, Bill, look!"

Purty leaned over, and gave a great whoop. "Holy cats, what a place!" Their beams flashed feverishly over the smooth floor of a huge cavern, sixty feet below, seeking, yet dreading the answer.

A faint moan came up to them; then another.

"They're alive," Garry went wild with delight, just as the moving oval of light illuminated two faintly stirring bodies, lying close to each other.

"I'm going down for them, Bill. You wait up here for me."

"Sez you!" Bill promptly retorted. "You do nothing without little Purty, see! It's you and me both together or not at all. But how, may I ask you, brother, are we climbing down without breaking our fool necks? We'd better hotfoot it back to the ship and get a coil of rope."

THERE seemed force to his argument. Sixty feet to hard stone seemed fraught with dire consequences. There was no way of descending safely; they were peering down through what seemed the roof of a vast underground chamber. Below, scattered in profusion, were jagged blocks of the omnipresent white ray material.

Garry did not bother to answer such irrefutable logic. Instead, he sat himself down, and began divesting the shoes of his space suit of the heavy lead soles that had been placed there to weight them down.

Purty goggled through his helmet in growing amazement. "Hey, what's the big idea? Gone crazy, or something. Here's your girl down there hurt, and Rade too, and you start undressing."

"Be a good fellow, and go back to the ship for the rope. I told you I'm going down."

Bill shook his helmet decisively. "Hell no! If you've gone crazy, I'm the red-headed lad that's your keeper. I'm undressing too!"

With that he proceeded clumsily to unscrew his own shoe plates. Garry hesitat-

ed, looked down again at the drop, saw Naomi trying to lift her head, and made up his mind. It could be chanced. It would be better if Bill went back for the rope, but he knew his man too well to press the point.

"Listen Purty," he told him, "we'll just jump down. It's easy."

Bill looked with an air of resignation at the distance separating them from the bottom. "Yeah, and so is dropping down the elevator chute from Level Four to Level One. All right," he heaved himself to his feet. "Let's go!"

A startled yell broke from him. He had soared straight up from the ground, smacked the top of his helmet with a dangerous crash against the roof of the tunnel, and dropped lightly back to the ground.

"That's the answer," Garry permitted himself the ghost of a smile. "Without weights we can jump six feet to one on earth—here goes."

Without more ado he poised on the brink, and jumped. Purty, who had been ineffectually trying to get at his bruised head, ran to the edge, flashed his beam. Garry was bending over Naomi, helping her up. Bill launched himself into the cavity, felt himself dropping slowly, landing on his feet with only a jar.

Both Naomi and Rade were up now, bruised and shaken, but otherwise uninjured. It had been the unexpected shock of the fall that had done most of the damage.

Garry was expostulating with Naomi for her recklessness, but she was not listening.

"It's true," she cried. "We've fallen right into the midst of a moon civilization. Look, isn't it wonderful?"

And as their rays illuminated the great underground cavern, even Garry forgot his annoyance in the overwhelming awe. Fully half a square mile it stretched, the ground smooth and hard as a ballroom floor, a great vaulting arch soaring dizzily overhead, intricately carved with queer intertwining coils and strange protuberances.

"I wonder what they represent?" Rade asked.

"We'll soon see," Garry answered, pointing to the near wall. A huge implanted

circular disk gleamed redly under the impact of the rays. "That must be a door to some other cavern."

He strode swiftly over, in long, light bounds, Purty soaring awkwardly behind him, unable as yet to adjust himself to his lessened weight. Rade and Naomi, however, their shoes still lead-soled, walked normally.

Closely they examined the red plate, pounded on it, heaved. It refused to budge. Purty leaned against the wall, panting lightly in disgust. Suddenly the disk slid up with a smooth, silent rush that almost threw him off balance. He had touched off a hidden spring somewhere.

As they stepped over the threshold into the unknown, a simultaneous sigh exhaled as one breath from the little party. They were rooted to the spot they stood on, unable to move!

A soft green illumination emanated from the involuted arches, the curving walls, the tessellated floor of this marvelous sublunar chamber. Vast and spacious it was, with fluted columns and soaring fantastic traceries that expanded into spiral whorls before joining the lofty carven roof.

But save for a fleeting glimpse, no one heeded the strange architectural designs. All eyes were drawn irresistibly to a welter of figures lying in distorted postures over the green-tinged expanse of floor. Strange creatures, unimaginably different!

The Moon Men!

A WED beyond speech, they gathered before the nearest of the queerly sprawled moon people, and stared at the dead representatives of an alien race. A green giant, whose head was a perfect sphere, from which stared, unwinking, a circling band of a myriad violet sunken pits. Eyes, Garry decided. Nothing else on the smooth sphere, except at the top, a torn and shattered membrane that disclosed beneath a hard green oval.

The body was covered by a scaly substance, set in numerous squares, while directly in the middle, a funnel-shaped orifice led into the interior. Probably a mouth

for direct inception of food into the stomach, he surmised. There were no arms or legs; but projecting at spaced intervals all over the round torso were sucker-like pads. Doubtless the moon-man progressed by suction grips aided by a peristaltic motion. An incredible being!

And there were thousands of them, piled in great heaps, scattered singly and in groups, their rotundities twisted and warped as though they had died in frightful agony. And on every one, without exception, the membraneous tissue was ripped and torn, with the flapped remnants turned outwards.

Purty broke the ghastly silence, his words in strange contrasts to his usual exuberance.

"We have found a people on the moon, a strange inhuman people, a race that possessed a civilization, and we find them dead! Why? When were they destroyed, and what did it?"

Garry started out of his bemusement. "The very questions I was putting to myself," he acknowledged. "It is easy to reconstruct some of their history—the early part—but after that—I don't know. No doubt they once lived on the surface; in an earlier time when the moon was young, possessed of an enveloping atmosphere and perhaps a moderate temperature.

"Then, for some unknown reason, the life-giving blanket was dispersed, used up, destroyed, and the moon assumed its present airless, lifeless state.

"The moon race must have had sufficient warning, for they prepared against the day. They constructed these vast underground chambers,—possibly there are thousands of them within the bowels of the globe—and retreated into them.

"Then something struck them—something they had no knowledge of, or could not guard against—and they died, in one universal cataclysm."

"Sounds logical," Purty admitted, "but then that means that they had to have a supply of oxygen for these retreats."

"No question about it. But that would be easy for a race of the high civilization evidenced here."

"Then there should be air in here now," Naomi interjected. She had been following the discussion very closely. "This chamber seems to have been sealed airtight."

Garry shook his head. "There is none. Look!" He turned his ray beam straight up. "You see where the circle of light impacts on the green radiance of the roof. But there is no path of light through the medium to it, as there would be if there were air. No, this place is absolutely airless. The very preservation of these bodies for God knows how many ages indicates that."

"But why?" she insisted. "What happened to the atmosphere, if it had been here originally?"

"It might have escaped gradually through the rocks," Garry submitted. "No stone is absolutely impervious to infiltration."

Purty let out a whoop that almost jarred the communication disks loose. He had been carefully examining one of the strange moon race.

"Glory be, I know the answer. That's what struck these birds down in a heap. The air gave out on them, and it wasn't any slow process either. It just went out with a rush, and left them suffocating and dying like fish in a dried-up river. Look here!"

HE pointed to the torn membrane at the top of the head. "That's his breathing apparatus, or nose, or whatever you want to call it. Notice what happened. The torn edges are lying *outside*,—just as though an *inside* explosion ripped it open. Naturally if the outside pressure of the atmosphere was suddenly removed, this thin membrane would burst from the stabilizing inner pressure!"

"I believe you've hit it, Bill," Garry exclaimed.

"Not everything," Rade Perrin's diffident voice intruded. "There is still the objection of Naomi of the Fentons. The place, as far as we can see, is airtight. What caused this sudden withdrawal?"

Garry and Purty looked at each other, stumped. But Garry only said: "That's what we'll have to look around for; some break in the walls, some crack due to a

moonquake, through which it might have escaped."

They started on a tour of exploration, carefully avoiding the strange forms, frozen here in the agony of death for uncounted ages. Much they found of supreme interest; seemingly cultivated beds of shriveled, dessicated fungus-like growths, ghastly white in the prevailing green; strange, laminated structures of polished stone that resembled machines—one such affair that Purty inspected, he swore must have been an oxygen-generating apparatus; others that faintly resembled furnaces, dynamos, and motors—yet all of the same stone material. Nowhere was there evidence that metals had been used or known.

Yet the search was fruitless—there was not the slightest sign of a break or crack through which the air might have escaped. The whole of the vast chamber was hermetically sealed. True, at one point, there was a jagged outcropping from the otherwise smooth texture of the wall. A small strata of rock had been forced through, to intrude some distance into the cavern.

"What do you think of that?" Purty queried.

Garry studied it, then shook his head decisively. "No, that couldn't be the reason. Some minor convulsion or rock slip along a fault might have forced that strata through, but you will note that it automatically sealed itself in. There's not the slightest sign of an open fracture around it."

"Isn't that rock the same stuff we found above in the ray from Tycho?" Naomi asked.

Purty peered closely. "You're dead right, lady," he quoth disgustedly. "And it's you who have to tell it to me, Bill Purty, sometime chemist and assuming to know my minerals. Well," he sighed, "guess I'll return to Earth and become an Aristocrat. Nothing else left for my ignorance."

"See here!" Naomi flashed, with a stamp of her shod foot. "I'll have you know you can't talk that way in the presence of a Fenton. I—"

Garry interrupted hastily. "Purty didn't mean anything, darling. It's just his way.

And besides, you must remember that he's a Worker—and so am I—and we are under sentence of death imposed by the Aristocrats."

Naomi was all contrition. "I'm sorry, Garry: I'm sorry, Bill. I forgot myself—forgot I'm no longer an Aristocrat either. You'll forgive me, won't you?" she pleaded.

"Surest thing. Forgive and forget is the best thing I do," Purty responded quizzically. "It's the call of the Fentons in your blood; that's what it is. Me, I'm only a classification member."

"Don't!" Naomi cried in heartfelt anguish. "Don't make it hard for me. You all are my very best friends. I am not superior to you in any way, and I don't want to be."

"But you are!" Rade Perrin shouted fiercely, silently to himself. "You're a gorgeous goddess, and we're all dirt beneath your dainty feet." Then he blushed to the roots of his hair, and shrank away as though fearful the others had heard him.

Garry said gravely. "We know it, Naomi, and Bill does too. Please, let us drop it." Very briskly. "Now let's get back to the ship, and get busy. This place is made to order for us. Here's where we set up our own moon civilization."

Purty muttered dolefully. "But why did this old race pass out? There's something wrong about this picture."

Nevertheless, he kept his disturbing thoughts to himself.

After several trials, first throwing the lead weights from Perrin's and Naomi's shoes through the outer gap, they all managed by a series of jumps to spring up the sixty feet, and pull themselves into the long tunnel.

As they clambered up the steep slope, Purty picked up a small fragment of the strange white ray-stone, thrust it in the outer pocket of his space suit. Something hammered incessantly at the back of his brain, and would not let him be. Some puzzle that must be solved before he would feel safe about their sojourn on the moon. The others did not notice the act, or if they had, would have thought nothing of it.

CHAPTER XV.

A Mysterious Attack

FINALLY when they reached the rocket liner, they found an anxious, alarmed group of Workers. They had been gone almost six hours, earth time.

Brad Quinlan was just getting ready to go out with a search party, convinced that Garry and the others had met with serious mishap. Jeris Farr had come to the fore again, playing very skillfully on the tensed nerves of the Workers.

The moon was uninhabitable, he argued, it would be the tomb of all of them. See what had happened already to the first party to go forth. They were dead, no question about it. Why risk more valuable lives in a senseless search; better try to return to Earth, and throw themselves on the mercy of the Aristocrats. Maybe they'd be let off with transportation to an Idler's Colony.

The group that naturally gravitated to his leadership had ranged themselves alongside. For a while it seemed as though his specious arguments would take hold. Even the great body of Workers who were loyal, hesitated. But Brad had stepped boldly into the breach. In no uncertain tones he denounced Jeris and his ilk as constant troublemakers. Would they desert the four who had gone forth, trusting them, and leave them to die?

That decided it! The greater number agreed that a rescue of the missing party must first be attempted, before any final decision about remaining was reached.

But Garry and the others did not know of the dissension until much later. The Workers crowded eagerly around the returned explorers, exultant at their safe return, bursting to hear their tale.

Garry sketched rapidly the complete story of their astounding discoveries, of the great underground caverns, of the strange moon-race that had existed eons before, and of whom only the pitiful bodies and some remnants of their civilization remained.

"Now," he concluded, "we have been

spared the greatest difficulty of founding our moon colony—that of excavating airtight quarters for our party. We have them at hand; broad, spacious, fitted with strange machines that we may be able to utilize after a study of their possible uses. Our fortunate discovery is a happy augury of our future."

A loud cheer greeted his speech, even the supporters of Jeris Farr joined in the acclaim. Only that worthy maintained a stony, sullen silence.

They divested themselves of their space suits. Bill was stacking his away when he reminded himself of the sample of the strange porous ray-stone he had picked up.

He wanted to analyze it; find out what it was. Nothing on earth resembled it. And that strange feeling persisted; that somehow their destinies on this new world were inextricably intertwined with this innocent-looking rock.

He took it out of its cache, turned it over thoughtfully in his hand. It was light, almost weightless. And it struck him more forcibly than ever, how cellular it was; it was more spongy than a sponge.

"What have you there, that fascinated you?" Naomi's clear voice startled him out of his absorption. She came closer. Oh, yes, of course, some of that mysterious stuff from Tycho's rays. I ought to hate it," she laughed, "it almost started an argument between us."

"As a matter of fact it did," he grinned, "but what's an argument between friends! But maybe you're right, for other reasons," he reverted to the stone again in all seriousness. "It's got me worried, and I won't sleep my usual twelve hours until I know what it's all about."

NAOMI'S hand went suddenly to her throat. Garry, still talking to the assembled Workers, saw the quick gesture, the look of alarm imprinted on her features. He broke away, was instantly at her side.

"What's the matter, dear? You look ill!"

"I—I don't know," she gasped. "All of a sudden I felt as though I were strangling. Oh—oh, I find it difficult to breathe. Some-

thing's closing my throat. Help me, Garry!"

Wild with alarm at her strange predicament, he caught her. In his arms she lay limp, breathing heavily, with visible effort.

Bill came up on the run, the forgotten stone still clutched tightly in his fist. Others, hearing the cries, were crowding around.

Garry turned a despairing look at his friend.

"Naomi, she's ill. Something struck her, just like that. Quick, help me with her to the hospital bay."

Purty opened his mouth to say something, when he gulped, and inhaled violently. A slow surprise spread over his freckled feature. Unheeded, the stone slipped out of nerveless fingers!

"I've got it too," he spoke with apparent effort. "Good God, I can't breathe. Air! Air! His face was purpling.

By now strangled cries were issuing from tortured throats on all sides. The Workers were gasping and heaving, as furiously pumping lungs were trying to obtain an adequate supply of oxygen.

Garry felt a slow constriction at his throat, and he too was gulping and panting. A roaring dizziness pounded in his temples, black spots danced before his eyes. Naomi lay quietly limp now. He laid her down gently, steadied himself to think. The place was a bedlam of staring, panting men and women, laboring for breath.

No question about it—the precious air was rapidly thinning; it was taps for all of them soon if the matter was not remedied quickly.

Garry tried to clear his head from the pounding and hammering in his ears. Either the oxygen generators had failed suddenly, or there was a leak somewhere, and the air was rushing into the airless reaches of the moon.

Purty was swaying near him, eyes bulging, mouth wide open. Garry shouted, his voice a thin squeak in the tenuous atmosphere. "For God sakes, look for a leak; I'm going to the generators. See if we can fix it; otherwise all dead..."

He trailed off to a whisper; the effort

had taken too much of the limited supply in his lungs.

Purty nodded with difficulty to show that he understood. Unsteadily he made his way to the air-locks, recruiting on the way several of the stouter Workers who had not yet succumbed. Garry staggered to the pumps; they were working; the pressure dots on the gauge showed normal output. He placed his face close to the stream nozzle; gulped in huge quantities of the issuing oxygen.

The pounding ceased in his veins; his fuddled senses cleared. It must be a leak then!

He ran over to where Naomi lay, picked her up, brought her back to the pulsing oxygen flow. He could hardly breathe by the time he reached it. He held her still face close to the stream, but something had happened. At the very tip, so it seemed, the flow swirled curiously downward.

He was fighting for breath again. His whole being cried for it. Iron bands were constricting about his chest, crushing it in. In a haze he saw Purty staggering over to him, stark horror in a mottled face, weakly shaking his head. No leak had been found! The Workers were dropping like flies, tearing at their throats as though an obstruction was causing their suffocation.

Bill stumbled; a white object clattered from under his feet. There was a roaring universe of shooting, coruscating stars about Garry. Through the sparks he saw Purty suddenly lean forward, almost lose his balance, pick up the little bit of white rock, and grope drunkenly past him.

Occupied as he was with the grim personal fight he was making for every spoonful of near vacuum, he barely heard the thin reedy tones. "Air-lock, quick; life'n death!"

Like some automaton he followed the swaying figure, unknowing what he did. Blood was gushing from his nose and mouth, darkness was enfolding him; but still he followed. Somehow they reached the air-lock. Bill tried to grasp the lever, missed it and slumped to the ground. He couldn't get up again.

With the dim consciousness that was still

left him, Garry wondered why Purty wanted to open the air-lock. Go out on the moon? Die faster! Should have tried to put on space suits—air there! Never thought of it—too late now! Damn fool!

Purty was gesturing weakly. His blue lips mouthed a whisper.

"Open!"

Die that way quickly. Bill good fellow, crazy now, though. Oh well, do as he says, can't harm any more. All over anyway!

Fumbling with his last ounce of strength, he found the lever, thrust it home. The great round door slid open. A distorted grin showed on Purty as he pushed, rather than threw, the little white stone into the air-lock.

His lips formed a desperate "Close it!" and he collapsed into a silent heap. Garry felt himself going fast; his lungs were bursting. Bill was all right now—no more pain, no more torture. Wish it were over for him too. Quiet and peaceful! Rest, fight no more! Just drop down and get it over with!

What was that Purty said before he stopped saying things altogether? "Close it!" What for? Took too much effort, more needless torture. No, Hell no! Bill's his friend; must obey his last words.

An arm that weighed a ton groped upward with a last superhuman effort, clung with tired fingers to the lever, pulled it over!

Garry had a fleeting vision of the seal sliding back into position as he fell headlong into an abyss of black flames. Then, abruptly, the pounding ceased in his ears.

A New Home

BLACK sparks that changed to a dazzle of white, a chaos, and heaving out of it Garry struggled upwards toward consciousness. Dimly he felt himself gasping; great draughts of air were drawn into tortured lungs; then he heard a moan — it was his own.

He sat up, dizzy, retching, still gulping the blessed fluid. What had happened? Oh yes, he knew! The air in the liner had

thinned out, vanished. But there was air now, plenty of it!

He looked around; Purty was up, blue of face, grinning wanly, but grinning! "Close shave, eh? My fault too! Should have known that—"

But Garry was not attending. All over the hold Workers were staggering to their feet, still dazed and trembling. A slender girlish figure whose eyes were pools of fear, searching, searching!

"Garry!"

"Naomi!"

Simultaneously they saw each other. Garry tried to rise, but his legs gave way, as he slipped back. Naomi darted over, caught him in her arms. "Oh, my dear, I thought you were gone this time."

His head nestled against her bosom. "I'm just a little too tough," he smiled thinly. Their arms went about each other, tightened. Purty waited patiently. He was getting used to these manifestations.

At length—"You were saying—?" Garry requested politely.

"Yeah, I was saying, and that's as far as I got." Purty pretended to be in a huff, but he was too full of the importance of his news to keep it up. "Say, Garry," he broke out, "I knew damn well that white stuff meant something, and here we are to prove it. Another couple of seconds, though," he grinned wryly, "and the proof would have been just too perfect."

"What on the moon are you talking about?"

"The ray-stone of Tycho, of course." Bill condescended to explain. "I brought along a sample for analysis and the damn thing almost did for us. Evidently it absorbs oxygen, and how! Can you imagine that little lump of stone sucking up into its pores every drop of air in the whole ship? It's uncanny! Lucky I stumbled on it coming back—it flashed on me that here was the cause. The rest you know."

Garry nodded slowly. "That would explain things. Also the airlessness of the moon, and the sudden death of the moon-race in their last desperate stand—remember the protrusion of the stuff into the cavern? Moon quakes must have brought underlying

strata of the deadly stone to the surface to doom all life." He relapsed into a brown study.

Naomi gently arose. "Dear, our people need help; there are women still unconscious."

"Righto, let's get busy."

Fortunately, no one had suffered any serious consequences. Within a few hours all were fit for duty, though somewhat weak.

"Now we've got to get to work, Purty."

* * * *

Garry, with Purty assisting, commenced operations without delay. There was no time to waste. Only eleven days (earth-time) remained before the lunar day would burst upon them with its seething heat. If they were not safely ensconced below by that time, they would be compelled to remain locked up in the rocket liner to wait another fifteen earth days for the lunar night. The oxygen supply was running low—there was grave doubt whether it would last that long.

Garry explained all this with the greatest frankness, urging the necessity of whole hearted cooperation (he looked directly at Farr, who avoided the glance), and for constant unremitting toil. Then he allotted the various tasks, according to the former training and ability of the Workers; and in charge of each squad he placed a foreman, responsible personally to him.

The first and most important task was to clean out the great underground cavern; give the thousand odd bodies of the moon race reverent burial; wall up the jutting ray-strata; clean out every little speck of the deadly material.

IT took time but the men worked in relays until it was done. There was no soldiering on this job—they had had too frightful an experience.

The next task was to set up the oxygenation apparatus in the underground chamber. Without air nothing could be done. Space suits were clumsy for hard, swift work, and the chemicals had to be renewed every six hours. Accordingly, every bit of the machinery was taken carefully out of the ship's hold, transported with many

groans—the sections were heavy—down the long tunnel. Already a squad working feverishly under Brad Quinlan, had constructed a runway down into the outer chamber. It was Garry's idea eventually to seal up the great break in the roof, to provide for an additional room. But for the present there was ample space for the colony in the inner chamber.

Under Purty's exhortations and running fire of good-natured bantering, the work of setting up the machines went on. For thirty-six hours there was unceasing hammering and tinkering, the steady blows falling and rising, but making not the tiniest sound. At length the gigantic task was completed.

Purty fed into the hopper of the machine pulverized limestone, of which he had found a supply not far from the tunnel mouth. The old fashioned engines, using the treated liquid oxygen and hydrogen for fuel, started operation. The limestone, or calcium carbonate, was first decomposed to calcium oxide and carbon dioxide, from which the oxygen was released by an extremely high tension arc.

With bated breath, all of the Workers stopped whatever they were doing to concentrate their gaze on the clear quartz globe in which the liberated oxygen should gather.

Suddenly a wild cheer rang through all the communication disks; the all-pervading green glow had just disseminated through the crystal sphere.

But Purty was not content. He plucked a bit of fungus, held it in the flickering electric arc till it glowed redly. Very cautiously he opened the pet cock, held the glowing fungus beneath it. A thin blue flame flared up. A twist of the pet cock, and the flare died out as suddenly as it had come. But Bill grinned happily to himself. The stuff was oxygen, all right, good, sound, breathable oxygen.

Steadily the machine spun and whirled, steadily the engines pumped, and the life-giving gas poured into the vast chamber. Faintly at first, then stronger and stronger, there came to the enthralled watchers a sound; then a series of sounds, the old familiar hum and pulsing of machinery in action. There was real air in the chamber.

The eerie effect of illumination on only material objects was gone, a diffused normal glow spread throughout the cavern.

A pentane thermometer, adjusted for extremes of temperature, was set up! Garry watched it anxiously. Would the newly-liberated air be warm enough to heat up this vast space from its normal fridity to a livable temperature? Or would they have to waste several more of their precious days in installing heating equipment? Slowly the pointer swung around; from minus 100 degrees C., it crept steadily over to minus five degrees C.—cold, but bearable.

Garry gave a great whoop; unscrewed his helmet with trembling fingers. Purty was doing the same. Their bare heads emerged simultaneously, they breathed in great gulps of the frosty air. It was then somewhat similar to that of a great mountain height, but it would do until greater volumes could be manufactured.

The days that followed were days of hard, unrelenting toil, but everyone bent to it with a will. The terrible lunar day was creeping slowly upon them. The terminator was only a hundred yards away now; dark glasses were necessary to gaze even for an instant at the blazing white surface beyond. Already they could feel the reflected waves of heat beating up at them when they ventured out of the ship. Even Jeris and his cronies were chastened; working with the rest.

It was a race against time. All equipment, the food stores, apparatus, had to be carried piecemeal, painfully, in a long endless trek to the caverns, more than a mile away; the heat was terrific, the space-suits were baths of steaming oxygen, when the last load was safely off, and the Workers trooped hastily to their new home.

Garry, Naomi and Purty were the last to go. The molten line of the terminator was impinging on the outer shell of the stream-lined rocket ship when the last airlock was securely fastened. The glistening liner was to be abandoned until the lunar night once more made it safe to venture abroad.

Bill made a mock speech. "Farewell, oh last tie to our earthly home—we must leave

thee. But fear not, little one, we shall return!"

Garry and Naomi smiled through the windows of their helmets. Now they could see each other without the aid of the beam-rays. The space suits were shining in the waves of reflected light that beat upon them.

"Think of it, dear," Naomi whispered, her eyes starry pools. "Our new home—the moon." She looked overhead. A thin wisp of blue-silver in the blackness of the sky—all that was left of her beloved earth—her father, the ordered luxuries of the Aristocrats, the proud caste she had abandoned.

Who can say there was not a little sigh to her renunciation; Garry was tense for the faintest symptom. If she regretted—! But she saw the anxiety in his eyes, and smiled reassuringly.

"Come!" she said simply.

CHAPTER XVI.

Despair!

IT took time to become acclimated to their new home. At first there was a good deal of confusion, but gradually, as the little colony learned their new tasks, the disorder lessened. The strangeness of their surroundings, the eternal radiance of the evidently radio-active rock walls, the curious lightness of their earth bodies, gradually wore off. Men and women were even heard to laugh again, something they had not done since the last terrible day on the Island of Death.

Yet, when another long lunar night had cooled off the burning upper surface, there was eager donning of space suits, as they streamed out into the frigid blackness, to gaze longingly at the unwinking stars and the beautifully serene earth sailing unimaguably high overhead.

Naomi pressed as close to Garry as her ballooning space suit would permit, as they both watched the bluish tinged disk. Garry sensed a certain nostalgia in her silence. He was an outlaw, debarred forever from returning. The moon with its dread silences, its desolate wastes, must forever be

his home; but she, a Fenton, a daughter of the Aristocrats, had voluntarily forsaken all the splendid graciousness of earth life to be an exile—with him!

"Naomi!" He spoke softly.

"What is it, dear?"

"You're sure you do not regret what you have done?"

Was that the faintest of sighs? But she answered bravely enough. "Regret? Not the tiniest bit. I have you, and that is all I desire. I would do it all over again if I had the chance."

But the great love that Garry bore her was not to be deceived. She meant it; there was no repining; but the sacrifice to this proudly nurtured girl had been terrific. His heart bled for her, but he was helpless.

* * * *

Dore Swithin was on his feet again, his face broken out in curious mottlings as evidence of his strange experience in outer space. He ran the heating plant, and ran it well. The waste gases of the oxygen manufacture were piped to the terminator zone, there heated by the sun's tremendous radiations, and then forced back into the chambers. An inexhaustible supply of electricity was assured by Bill Purtell's happy thought of rigging up thermocouples of beryllium-steel and copper in closed circuit. One point of junction was set on moveable platforms in the terminator zone to follow continuously the heat of the sun. The other junction remained always in the shade at extremely low temperatures.

Fortunately, Purty found, mixed in with the volcanic ash, considerable quantities of alums, sulphates, and carbonates, in large fractured crystals. He gave vent to a whoop of joy.

"Here's our water supply!" he cried to Garry. "I was worrying to death about it. Oxygen we have plenty, but without hydrogen, we'd be sunk after our tanks gave out. Now we can use the water of crystallization from these."

That left only one major problem for the colonists, to solve, but all the others paled into insignificance before it. *Food!* They had in their stores about a six months' supply. When that was gone, what?

Even if all the essential elements were found, there was none of the intricate machinery necessary to the synthesis of real food. Nor was there anyone in the entire colony who had the faintest idea of the construction of the apparatus.

Garry appreciated the gravity of the situation. He talked it over with Purty. "I had some hopes of finding plant life in the interior caverns of the moon," he confessed, "but that's out."

"How about that fungus stuff we discovered when we broke in here?" Bill suggested.

Garry shook his head decisively. "No good. In the first place it's withered, and the most careful examination I could make disclosed no spores or seeds. Besides, it's not food for us, even though the ancient moon-people evidently used it.

"No, we'll have to get along with what we have; the bags of seed we brought along. There'll be not much variety in our food supply, I'm afraid, but we'll have to get along."

PURTY grimaced. He liked his victuals, and a vegetarian diet did not particularly appeal to him.

"So we'll have to get started on our planting," Garry went on, "if we expect to have a crop by the time our stores give out."

"Hmm, who knows anything about farming?"

"Jeris Farr."

Bill's face flamed. "That skunk!"

"Can't help it. He's the only one in the colony. The seeds are too precious to be experimented with by novices. If they fail us—" Garry's shrug was eloquent.

Purty saw his logic, and subsided. But he grumbled nevertheless. "I hate to put that bird in charge. I don't trust him further than I can throw a fit."

Jeris took the news of his appointment as Agriculturist with outward apathy, but there was a gleam in his little pig's eyes, and the black bristles of his beard quivered slightly. Garry ignored the man's sullenness, and explained to him very carefully the importance of his task; how the very

life of the colony depended on his success in growing the precious seeds.

Farr sneered openly now. "So the high and mighty so-called Leader has to depend on me, eh? Finds he don't know so much's he thought, hey?"

Garry controlled himself with an effort. "None of us know everything, nor do we pretend to," he answered evenly. "You are qualified for that particular job, and it's up to you to make good on it."

"Well, don't try to teach me my business," Jeris growled in his beard, and turned abruptly away. Garry stared after him thoughtfully.

A month later, the whole colony spent a goodly part of their leisure hours in eager inspection of the carefully raked soil beds where the seeds had been planted under Farr's supervision. Under the forcing influences employed, the first tender green shoots should be pushing their way through the brown earth. A fever of expectancy was in the air. Would the seedlings take root in this strange environment? Would the grain grow?

Even the poorest witted of the Workers knew that their very lives hung in the balance. Sharp eyes scanned the level earth continually for the first sign of a crack. But there was none, not the tiniest.

A week passed, two! Still nothing. The great patch of ground was bare, lifeless. Despair crept upon them, the slow despair of people who still hoped, but were beginning to fear.

Garry questioned Farr, but the man was sullen.

"I'm doing my best. Can't help it if the damn stuff doesn't grow. Seeds might have been sterile, ground may be no good. How should I know?" Parker thought he sensed an undercurrent of mockery, of hidden exultation in the man's attitude, but he had nothing definite to go on.

Two months, and still not a sign. By now, surely, allowing all leeway, the grain should have sprouted. The Workers were frightened, the men becoming bitter and ably. Naomi went about trying to comfort, reckless, while the women cried interminably to cheer them up, but they refused her min-

istrations angrily. Somehow they connected her, an Aristocrat, with their misfortunes. Work slackened. The men hung around the fateful area for hours, scanning the ground with hard bitter eyes.

Déspair grew into muttered imprecations, little knots muttered together, and drew apart as Garry or Purty approached. The atmosphere was electric. A spark might set them off, into wild, senseless mob violence. In a few months they would all be dead anyway, so why work?

And Jeris Farr, his black face a perpetual taunt, circulated industriously among the disaffected, whispering, whispering.

Garry was frankly puzzled. "I don't understand it, Purty," he confided. "That soil looks to me just as good as any I've seen on earth. And the fact remains that the moon-race actually did grow things in it—remember we found the planted fungi."

Purty considered. "There's something smelly about the whole affair. That ape Farr is in charge, and nothing is growing. Seems to me there's a connection there!"

"Nonsense," objected Garry. "The man wouldn't be so crazy that to spite us, he'd kill off the whole colony, including himself."

Treachery!

"HE'S got something up his sleeve," Purty said slowly, "and it doesn't mean losing his precious skin, either. Tell you what, I'm curious. I'm going to dig up the edge of the bed, and see why the blasted stuff isn't taking hold."

"There's nothing else to do," Garry agreed.

In short order, Purty was wielding a vigorous spade. Jeris Farr saw him, came running over, black rage flaming through his distorted countenance.

"Here, you can't do that!"

Purty paused to look him over contemptuously. "Who says I can't?" he challenged.

"I do," fairly shouted the other. A crowd of Workers, attracted by the commotion, surrounded them. Jeris turned to them. "See what he's doing; this fellow that

brought us all out here to rot. He's destroying any chance there might be of the grain coming up."

Purty disregarded the growls that went up from the Workers, notably from those who were Farr's cronies. He spat on his hands contemplatively, took a firmer grip on the spade, while little lights danced in his bright blue eyes.

"And who's going to stop me?"

There was a little edging toward him, but Garry, Swithin, Perrin and Quinlan burst through the encircling crew. Garry raised his voice commandingly. "Back, everyone of you. Purtell knows what's he's doing, and it's for your own good, I tell you."

The threatening adherents of Farr shrank back from the little body of determined men. They had had samples enough of their prowess. Purty turned regretfully. "Here you've got to come butting in and kill a nice little war. I was just aching to spoil that bozo's face for him. Well, have to be some other time now."

His spade bit deep. He turned over the soil carefully. A few blackened shrivelled seeds fell loose.

"See that, just as I thought. All dead as a door knob. 'S funny; must be a reason."

He bent down to examine the scattered soil. Suddenly his freckled face went grim, his jaw hardened. He scooped up some of the dirt in the palm of his hand, held it up for Garry to see.

"The dirty, double crossing, nameless rat!" There was a deadly slowness to his speech that was not usual with him.

"Why, what's the matter?" exclaimed Garry.

"Look here. See that scattering of white. That's *alum powder*. The residue from our water generator, after the removal of the water of crystallization. No wonder nothing could grow here! It's burnt the seeds to a crisp."

Garry stared fascinated at the noxious mineral. So this was the end of the great scheme of colonizing the moon, as a haven of refuge to the oppressed Workers of the Earth!

Purty and he looked blankly at each

other. All their precious seeds had been sown; and all were destroyed. A bare two months their proesent food supply would last, and then—. Death by slow starvation!

Garry felt a surge of cold reasoned anger at the despicable wretch who had brought them to this pass. But Purty was the first to act. With a wild whoop he dived through the scattering Workers, straight for Jeris Farr. The man saw him coming, set himself to meet the attack. But he never had a chance. A long ape-like arm shot out from nowhere, caught him fairly on the point of the chin. The power of the blow lifted him off his feet, and he came crashing down into a twitching mass. Bill stood over him, a devastating fury. "Get up, you yellow bellied, thieving son of a cross-eyed sea cook," he roared, "get up and take what's coming to you." But the fallen figure did not stir.

A few of Farr's cronies came forward, protesting. "Here, here, that isn't fair. Why do you attack Jeris Farr like that?"

"Because," it was Garry who spoke up, "this time he has surpassed all his former villainies. Look!" he cried, holding up a spadeful of earth for all to see. "For some unknown reason Jeris Farr has sentenced us all to death. He deliberately mixed alum in with the soil to kill off the seeds. He has succeeded! We have no more! When our food runs out, we are through! There will be none to take its place. Do you know what that means?"

A MURMUR ran through the men and women as the purport of Garry's impassioned speech penetrated their dazed minds. The murmur grew to a growl, the growl to a roar, a roar of mingled terror and execration for the man who had sealed their death-warrant.

Then someone shouted. "Kill the rat!" The cry took hold; in the twinkling of an eye the colonists were transformed into a raging, shrieking mob, clamoring, lusting for the blood of the prone man. They surged forward tumultuously to tear him limb from limb. His former intimates were in

the forefront, eager to be the first to stamp on him, to seek vengeance for the betrayal of their own lives.

Garry threw himself forward, straddled the limp figure. Like a clarion his voice burst above the tumult.

"Stop! We'll have no blood on our hands, not even the blood of Jeris Farr. We are civilized beings, not animals. I have a better plan, if you'll listen."

Such was the force of his cool commanding presence that the rush halted dead in its tracks. With blood-shot eyes and snarling lips they paused, and waited.

Garry seized the opportunity to speak rapidly. "He has been a traitor to us all along. I blame my own forbearance in the face of much provocation for this last dastardly deed. It was his idea to force us to return to earth, where he could make his peace with the Aristocrats by betraying us to their tender mercies. You know as well as I what we could expect. Death! Well, we're facing it here, but at least we can face it as free men and women, not as cowards and slinking slaves.

"But Jeris Farr shall not avail himself of his treachery. He shall not even be permitted to have the comfort of the companionship of strong comrades when the inevitable end comes. Let us give him a space suit, and thrust him out of our society onto the surface of the moon, there to shift for himself. He has destroyed our food, our hopes—let him go out alone, without food, with only the air in his oxygen helmet. What do you say?"

A babel of voices rose high. "No, no!" someone yelled, "throw him out *without* a space suit; don't give him a chance."

"Absolutely not," Garry retorted vigorously, "that is murder. His chances of survival will be slim enough."

And so, after hot, futile arguments, it was decided.

Farr was dragged roughly to his feet—he had come to by now—and told of the decision. He took it in sullen defiance, his black face glowering. He was thrust none too gently in his suit, and personally con-

ducted by Purty to the mouth of the outer shaft. It was night again, and the blackness was impenetrable. There was no Earth shining in the sky.

"Get out, you louse, and stay out. I hope it takes you a good long time to croak." Bill gave him a parting kick that relieved his savage feelings considerably, and returned in better humor.

A consultation was in progress. Garry greeted him. "We've been waiting for you." There were Swithin and Perrin, Quinlan and Naomi. Their faces were pale and set. There was no underestimating the desperation of their condition. Outside their little walled-off room, the Workers were giving way to utter despair. An apathy stole over them, broken only by the low moaning of some women. Grim lingering death stared them all in the face.

Garry addressed the little group. "Frankly, we're up against it, yet we must somehow find a way out. There is no possibility of any animal or vegetable life on the moon. No use discussing it even. Returning to Earth is out of the question. Death waits us there also. We cannot hide from the Aristocrats, the earth is too well policed. Fight them is just another form of suicide. What could our few hundred, unarmed, do against a whole world?"

"I say fight!" Purty broke in heatedly. "I vote for taking the old ship, shoving off, and head-for New York. Kill as many of the damned Aristos as we can before we get bumped off. At least we'll die like men; not like rats in a trap."

There were murmurs of approval from the other men. They were fighters, all of them.

Garry shook his head doubtfully. "As a last resort, yes!" he agreed. "But that's not a solution; that's just choosing our death. Isn't there *anyone* who has a plan to get our people out of this predicament whole?"

His questing eyes moved over the set grave faces. Silence! His gaze rested on Naomi, and softened. Poor Naomi! She was going out with the rest!

CHAPTER XVII.

A Solution

BUT Naomi's eyes were not on her lover. She was staring thoughtfully at the place where a cemented patch protruded from the smooth surface of the wall. Her forehead puckered into a tiny frown. Then, like the sun bursting from behind a glowing cloud, an excited smile swept over the perfect oval of her face.

"Oh, how stupid of me, how stupid of all of us! Here we stand condemned to death, and salvation is staring straight at us!"

The four men turned to her at once. "What do you mean, Naomi?" Garry cried.

"Bill put the idea into my head with his eternal cry of 'fight!'" Her dark eyes danced as the words came tumbling out in a little rush. "Of course we'll fight, and we'll win too. You said, Garry, that we have no weapons. I say that we have, potent ones too, so potent that the Earth and all my caste will bow down at your feet."

Purty had bowed ironically at her references to him, but now his honest freckled face lit up as he sniffed the taint of approaching battle.

"Say lady," he clamored, "the weapons, the weapons, show me the weapons!"

Naomi lifted her arm dramatically. "There!" She pointed to the recently cemented patch. The men looked blank.

"Oh, you fools," she stormed, "and I thought you all had brains. Don't you see, don't you know what is behind that patch? The ray-stone of Tycho!"

A moment of puzzled non-understanding, then Garry and Bill let out a simultaneous whoop.

"Naomi darling, you have saved us again!" Garry's eyes were adoring.

Purty was wringing her hand frantically; the little white hand totally submerged in the great hairy paw. "Lady, you're a wiz! I hereby humbly and solemnly apologize. If that bozo Garry ever gives you the air, you just come to little Purty and he'll take you in."

"When he'll give me up, I'll consider your generous offer. In the meantime my hand

can't stand the strain." Purty dropped it hastily.

Garry had her in his arms. "You're just wonderful. It took your quick wit to set us right."

The others stared at the trio blankly. They still hadn't grasped the idea. Garry saw their bewildered looks, and laughed happily.

"You boys don't get it yet?"

They shook their heads.

"You remember what happened on the flier when Purty brought in a tiny piece of the ray-stone."

Rade spoke up. "Can we ever forget?"

"Exactly. That little bit of stone sucked in the entire atmosphere of the great ship. Now suppose we load up the old boat with the stuff, carefully sealed of course, and take it back with us to the earth? We'll plant it all around New York. Use your imaginations for the rest. How long would the city last? Or any other great metropolis where we choose to drop it?"

There was instant comprehension. Rade and Brad burst into wild cheers; Dore Swithin was as impassive as ever. Nothing had ever been known to change his quiet sardonic air.

* * * *

All was bustle and confusion. The men worked as they had never worked before. The prospect of deliverance from the fate that awaited them, the possibility of compelling the Masters of the Earth to bow before them, infused new life into their veins. As usual though, there were some who could not grasp the significance of Naomi's proposal, who were lapsing into the fatalistic apathy of those of their kind who had been destroyed on the Island of Death. But the anger of the majority forced them to work, albeit unwillingly.

As Garry explained, it was impossible to take the entire colony back to Earth. Every inch of available space was needed for the precious cargo of ray-stones. The more that could be planted in strategic centers, the more chance of bringing the proud Aristocrats to their knees. It was not to be a matter of brute strength, but of subtlety, utter secrecy, and infinite daring.

Three were to go—no more! Garry, as leader; Naomi, because of her knowledge of Aristocrat ways and ability to move among them unobserved; and Rade Perrin, to assist in the operation of the rocket-ship and to carry on, if Garry was caught. Rade blushed like a girl at the designation, and the furtive sidelong glance he cast at Naomi told even more.

BUT Bill raised a howl of disappointment. "Wha-a-at!" he yelled, "leave little Purty behind when there's a fight to be had! No siree, I go too."

"No you don't, Bill," Garry told him flatly. "You, Swithin and Quinlan are necessary here. It'll be a big enough job for all of you to keep things going and the Workers contented until we return. If we don't, you'll know it's because all of us are dead, and then it'll be up to you to find another way out."

It took Purty long enough to see the logic of the situation, and even then he grumbled and growled. "A fight and me not in it! Purty old boy, you're just a doddering old executive, that's what."

Tons of ray-stone of Tycho were chopped out and broken into little pieces to provide the greatest possible area of surface. It was carefully packed in drums, in canisters, in tanks, in every container that was on hand. By the end of a week of earth days the hold of the liner was brimming over with the strange crushed rock.

A small store of food was placed on board—the crew of three would not need much. All other equipment was set in order, the last repairs made to the delicate apparatus. They were ready to start.

Nothing had been seen of Jeris Farr since his expulsion from the colony. He had wandered off in the blackness of the night, and disappeared as though the ground had opened and swallowed him up. The desolate Moon was guarding her secrets well. No one thought he was alive—it was believed he had crept into some hole to die.

None, that is but Bill Purtell. He shook his head and growled.

"You can't scotch a snake like him so

easily. Mark my words, we'll hear from him yet and plenty."

But Garry only laughed.

The entire colony was congregated before the air-lock of the rocket liner, awkward, ungainly in their ballooning space suits. The dazzling day was but a few yards away from the hull. Within an earth hour the ship would be bathed in the fiery glow. The loading had been completed just in time.

The adventurous trio, Garry, Naomi and Rade, were standing at the entrance. The colonists, whose lives depended on the success of their mission, were startlingly illuminated against the black curtain of night by the reflected glare of the approaching lunar day. No one spoke, but sobs came here and there through the communication disks. Would they ever see each other again? The three pressed close to each other for comfort.

A hoarse gruff voice, fighting to overcome unaccustomed emotion, sounded in their ears. It was Purty's. "Time's up. Go, Garry, Naomi and Rade. And—and—damn it all—you know what I mean!" A choking sound came to them as a figure turned and ran to the rear. Their own eyes were bright with unshed tears.

Garry waved his hand—that was all he could trust himself to do. Good old Purty, good old everybody! A roar of sound calmed in their helmets; the Workers were shouting, crying farewell. The last they saw, as the great outer seal silently slid into position, was frantic waving arms, and a weird sea of bobbing helmets.

They were in the control room, fastened in the swinging hammocks. Garry was silently watching the chronometer. The affair had been timed perfectly. In thirty seconds they were to take off. Time enough for the colonists to retreat out of range of the searing blasts of the rocket tubes; just on the dot for the calculated course back to Earth.

The light dot was bisected by the hair-line. Garry pressed the button. There was a roar, a blinding flash through the periscope, an awful sense of compression, and Garry passed out. But only momentarily. He struggled out of the hammock; released the others. No one was hurt. The second

experience was not nearly as bad as the first. The Moon was rushing from beneath them, a great craggy, pitted landscape. The start had been successful. Would their mission be equally successful? Each tried to find the answer in the others' eyes.

Return of the Exiles

THE long rush through space was uneventful. Garry was no longer a novice at interplanetary flying; he plotted the course, touched off corrective rocket bursts, avoided huge meteorites with assured ease and facility. To Naomi and Rade he explained his plans.

"I'll try to land on the Island of Levis. We're running rather short of fuel. There ought to be tanks of it down there, remember we left a lot behind."

On schedule time the liner reached within striking distance of the earth. Garry swerved the ship sharply, repeating the initial landing maneuver that had brought them safely to the surface of the moon. The great craft zoomed through the unresistant ether like a new satellite around the earth. Three times it flashed over the round face of the world, on a long spiral slant. The third time, at a height of one hundred and fifty miles, the streamlines bit into the resistant atmosphere.

Half way around on the fourth circling, Garry changed over. The huge airfoils caught hold with the scream of a thousand devils. The gyrocopter vanes whirled aloft. The turbines screamed and settled into steady vibration. They were home again—if this Earth on which their lives were forfeit could be called their home.

Nevertheless the exiles stared down at the fleeting familiar landscape with the yearning of returned prodigals. They were skimming over Asia now; the broad Siberian steppes turned beneath in a shining blue of green. It was spring now! How different from the alien, inimical, desolate Moon! This lovely Earth was theirs; there was no other like it in the universe. Simultaneously they turned to each other; each read aright the shining resolve in the others' eyes. They would conquer for themselves

and for those poor people left on the moon, a place in their fair world, or die in the attempt. There must be no turning back!

Soon the Pacific rolled blue beneath. Garry plotted his course by the intermittent signals that came through from Greenwich. It gave him an odd thrill to see once more the old familiar dots coursing over the charts. The televiser was scanned eagerly, but only the interminable wastes of water flashes at them.

Then, "It's over there, see!" rose Rade's joyous shout. Almost in the center of the visor, the white of the screen showed a blank circle against the tossing, heaving Pacific.

Garry smiled his satisfaction. "We'll drop to the three mile level and have a look—see before we land. Mustn't take any chances, you know."

"Think there are police still on the island?" Naomi queried anxiously.

Garry shrugged. "Can't tell. There shouldn't be any, of course now that Vedor Island has lost its usefulness. But Sadakuchi may have anticipated the possibility of our return."

Naomi shuddered at the mention of the hated name. A sickening wave of repulsion swept over her as she thought how near she had been to marriage with that suave, cruel Asiatic. Garry saw it, and folded her in his arms protectingly.

"Whatever happens," she whispered. "Don't let me fall into his hands." Her lover nodded fiercely as he pressed her closer.

Rade averted his eyes. His devotion was log-like, hopeless, yet something hurt inside at the sight of their complete absorption in each other.

"Three mile level reached, sir," he reported coldly, efficiently.

Garry released the girl, sprang to the periscopes. The televiser was useless in this area. As he peered into the lens, the others saw his body stiffen suddenly, and heard the involuntary groan that escaped him.

"What is it?" Naomi's voice sounded in his ear.

He turned to her a face from which all

the blood had drained. "Look for yourself." The words issued slowly.

With a beating heart she took his place at the lens. Below, the two islands were within the range of vision. Vedor, the Island of Death, drew her eyes as though it were a magnet. She stared with a slowly dawning horror.

There, sure enough, was the familiar outlines of the terrible black mountain. But the truncated top, the vast shimmering bowl of the green luminescent gas, where were they?

In its place she saw a great metal dome from which a huge pipe line dropped down the steep slope of the mountain, writhed across the beach, and plunged into the sea.

Her fascinated eyes followed its dim outline through the translucent waters to its emergence on the Island of Levis. Her heart almost stopped beating. For Levis was swarming with tiny moving dots. And though they could not distinguish at this height they fancied they made out the yellow of the Chemical Workers and the flaming scarlet of Sadakuchi's police.

AS she turned away, Garry met her with level gaze. He was himself once more, contained, resourceful.

"Yes, dear," he said gently. "I know what you're about to say.

"Somehow the Aristocrats have discovered the effect of the gas on the explosion rate of the fuel mixture. And they have already set up a plant to utilize the phenomenon. And the worst of it is that it was probably one of the old crew of this ship who reported the secret."

He smiled bitterly. "Down trodden slaves, ready to curry favor by squealing on their own kind. No wonder the masters have lorded it so securely and so long."

"But what are we going to do now?" Rade burst out. "We can't hide any place else on the face of the earth. Their damned televisions will pick out the ship and reveal us."

"That is a problem," Garry agreed. "Of course," he continued musingly, "we could sink the ship offshore somewhere, and trust to our wits to carry us through."

Perrin objected. "Then we can't carry more than a handful of the ray-stone, and even if we do damage somehow, how are we going to get back to the moon for our waiting comrades?"

"That's true," Garry nodded. "We'll simply *have* to find some spot where the visors can't get at us, to park the old boat."

A memory struggled dimly in Naomi's consciousness. Her maid Emma!

"I have it," she cried delightedly. "The very place."

"Where?"

"In the Great Mid-Continent Park. Remember I told you Emma went there to hide herself from my father's wrath. It's the only wild territory left in the Americas. The Rockies cut right through it, you know. Full of ravines and gorges and shaded glens. Very few people there at this time of the year—there's snow on the mountains yet. And only a handful of rangers.

"Emma knows the chief—he'll be loyal. We can easily hide the ship in an inaccessible cleft, and use that as a base for operations. Besides," she ended with a little wistful smile. "I'll be very glad to see Emma again. She was like a mother to me, even though she was only a Worker."

"The very place!" Garry wasted no further comment. He made his decisions swiftly.

A lever closed the gyrocopter vanes and the expanse of wings, another shut off the turbines from their roaring action. A button, and the rockets sputred in continuous sheets of flame. Once more they were a rocket flier, hurtling through the stratosphere at half a mile a second to their new destination.

In two hours its change-over was made. The gyrocopters held them motionless over a vast wilderness of serrated peaks that thrust their hoary heads boldly into the air. Halfway up their slopes, and as far around as the visors showed, was a tangle of dense forests and rushing, tumbling silver streams. Not a sign of life in thousands of square miles, not a curling smoke drift, not a habitation to show that man or his works had ever defaced the primitive wilderness.

A hundred years before, the World Coun-

cil had ruthlessly evacuated and turn down town after town within this area, replanted it with stately pines and cedars, and decreed that forever this was to be natural parkland, inviolate. Only the Aristocrats were permitted to enjoy its marvelous possibilities as a playground; the Workers were rigorously excluded, except for the necessary rangers and foresters.

CHAPTER XVIII.

A Sudden Onslaught

GARRY and Rade Perrin hung entranced over the glamorous view. Rade had never been out of New York while on earth, and Garry had zipped over it countless times, but fifty miles up, where the landscape was only a blur. Naomi had been there several times, but even to her the tumbled mountains and stately forests were an ever-present delight.

"The problem is where to land," Garry broke the silence. "Some place where we'll not be seen. Do you know of any, Naomi?"

She shook her head. "I can't seem to place our position," she confessed. "It looks quite different from the air than when you're on the ground."

Garry cruised slowly along, just clearing several jagged peaks, his keen eyes searching the terrain.

"I hope the visors don't catch our image," Perrin sounded worried.

"That's a chance we'll have to take," was Garry's grim response. Then he leaned forward over the scope, holding the ship motionless. When he straightened, his face showed his relief.

"Just the spot for us. Made to order. A canyon, just broad enough to let us through. The bottom seems to widen out a bit. There's a stream running through it."

Very gently he set the great liner down. A precipitous mountain loomed to one side as they dropped, cutting off their sight with a vast wall of rock. Down, down they went. The canyon swam into view, a curving gash in the wooded slope. Garry jockeyed into position, and eased the boat very carefully into the yawning gap. A tense

moment as she settled. Was there sufficient clearance? A shuddering scrape on one side, a bump on the other, and the tired old freighter drifted by imperceptible stages to the grassy floor of the chasm, came to rest with hardly a tremor.

It was a perfect landing! Garry was secretly proud, for he was a rocket flier, not a plane pilot. But his face was as calm as ever, as he opened the wide exit door.

"Now for a breath of *real* air, that smells of trees and pastures, not of filthy chemicals."

With one accord they moved to the door, sniffing eagerly the odorous wind that already had glided into the stuffy interior. The way lay past the cargo checker's cage, where the supercargo hand-checked each bale as it was brought into the hold, in the days when the old craft had been a freighter. Now the cubby hole was dark, useless, untenanted.

Naomi was the first to hear the rustling sound, the stealthy tread. She turned swiftly. A startled scream rang out, a scream of warning. It was too late! Garry went down in a bloody heap under the smashing impact of the uplifted bludgeon. Rade Perrin whirled just in time to catch a glimpse of the bearded, hate-filled face, the heavy cudgel raised high to strike. He threw up his hand toward the threatened blow, and tried to dodge. The descending weapon broke down his guard, caught him glancing on the forehead. He too dropped with a little moan and lay still.

Naomi darted in, a fury of beating fists. "You—you!" she choked with the intensity of her wrath. But she was no match for the assailant. A powerful arm shot out, caught her in a grip of steel. In spite of her furious strugglings, the man bound her swiftly and expertly with a length of rope he dragged out of the cage. She lay helpless, watching him proceed coolly to truss up the two unconscious men.

"Thought I was lying dead and frozen up there on the moon, didn't you?" growled Farr as he finished his task. A vicious kick drove into the ribs of the unconscious Parker. "See how you like that, Mr. Leader!"

"Stop that, you brute! Coward, kicking an unconscious man! You wouldn't dare if he was able to fight back." Jeris whirled to her, a vicious snarl twisting his mouth.

"Who're you calling a coward? Me? Think again, lady. I'd like to know who else could have gotten out of the mess I was in? It's taken guts, I tell you."

"Sneak! Traitor!" the girl was finding an unholy satisfaction in thus baiting the man who had finally ruined all Garry's plans and hopes. Satisfaction, and refuge from hysteric weeping. She'd never break down in front of Farr—never. Her little fists clenched, and she spat another epithet at him. "Fool!"

A ROARING laugh came from Jeris. "Fool, am I? That's the best joke yet. It's Parker who's the fool, and that ape Pur-tell. They thought they'd gotten rid of me, huh. Kickin' me out to die.

"Hell, I near split my sides laughin' just as soon as I got out o' sight. There was the ship, restin' nice and pretty without a single guard on board. There was plenty o' food on her for one man, and plenty o' hiding places. So I just opened the door an' walked in. Snug as a bug in a rug I waited for what I knew had to happen.

"You guys had only enough grub left for a month or so. An' you couldn't get any more, I'd damn well taken care o' that. Somebody would have to sail the ship back to earth. Mebbe the whole colony, mebbe only a delegation. But sooner or later, back to Earth she'd have to go. So all I had to do was to wait."

He paused, and chuckled. "Too bad I didn't know how to run the ship myself. That would have been the best joke of all, to leave you stranded on the moon while I piked off on my lone. I'd like to have done it."

"What do you think you're going to do now?"

The little pig eyes wandered slowly over Naomi's prostrate figure, "I know what I'd like to do," he muttered to himself. Aloud, however, he said: "That's easy. I'm going back there in the cubby-hole to get my communication disk, and I'm goin' to let Henry

of the Fenton's know that I've got his daughter here for him, and also the guy that swiped her. Guess there won't be a nice little reward for Jeris Farr when that news gets to New York? And won't I laugh when I see Parker gettin' what's comin' to him!"

"Oh, you couldn't, wouldn't dare."

"I wouldn't, huh? Watch," and the renegade started off to carry out his threat.

"Hey there, what's all this?" a gruff voice started Farr into whirling again. In the entrance stood a burly figure, clad in the forest-green of the Park Rangers. His gnarled hands held a paralyzing projector. No Worker was permitted under any circumstances to handle more lethal weapons.

"Stick up your hands!"

Farr's hairy arms went slowly over his head.

"Now, suppose you do some explaining. You've got plenty of it to do too—you've broken about every Park regulation there is." The ranger mouthed the list lovingly: "Unauthorized Workers present in Park. Landin' rocket-ship in Park; Disorderly conduct in Park; Enterin' the Park by other than the designated air-ways; Not reportin' presence in Park at entrance air-ways; and a skintillion others. It's goin' to take me a half a day to telewrite my report on this. Where the devil did you come from, that you don't know the rules?"

"We just came from the moon, officer and—", Farr began to be interrupted by a raucous laugh.

"From the moon, is it! So ye're trying to kid me, are yeh! Well, no prisoner has kidded John Matson yet!"

"What did you say your name was, John Matson?" Naomi's eyes had opened wide, she was writhing herself to a sitting position.

"That's right, John Matson." Instinctively a note of respect crept into the man's voice as he replied, though there was nothing to indicate that the girl was other than a Worker.

"Then you know Emma White?"

The man started, a veil dropped over his eyes; "Emma White?" he repeated slowly.

"You do, I know you do. Many a time

has she spoken your name. Your wife was her sister, Julia White."

"Who're you?" the astounded Matson demanded.

"Naomi of the Fentons, Emma's mistress."

"What! In them clothes!" The ranger stepped forward, then paused. "I don't know what you're talking about. I don't know no Emma White, and what would a Worker like me have to do with Naomi of the Fentons?"

"Oh," exasperatedly, "Don't be stupid. I'm not a spy, looking for Emma. If she's here, call her. She'll soon tell you who I am."

Into the Forest

THE big forest-keeper looked from Naomi to Farr, his eyes shifted to the recumbent forms of Garry and Perrin, then back again to Naomi. At last he said; "Well I dunno. Mebbe you're tellin' the truth. Mebbe even this guy, what says you come from the moon, ain't lyin'. But it looks mighty queer to me. All o' this looks queer, with the three o' you tied up."

This gave Jeris Farr the cue he was waiting for. "Listen," he broke in eagerly. "It's all true. She is Naomi of the Fentons. And that's the man she ran away with. Do you know what that means to you? You're a made man, just play along with me, help me get word to Henry of the Fentons, and you'll be able to ask for whatever you want."

"Oh, so that's the way the land lies, is it? Here, get them hands up, an' keep 'em up." There was no friendship in Matson's grim voice. "Say, Miss, I'm beginning to dislike this guy. I tell you what I'll do. I'm goin' to tie him up like the others. An' then you an' I are goin' to take a little walk."

"You damn fool, you're throwing away the opportunity of a lifetime!"

"Oh, yeah. Now, here's some nice rope that'll fix you up pretty. So-o-o-o. Now, you kin put them hands down. So-o-o-o, and so-o-o. There, that's a pretty good job. Now lay down, like a nice leetle boy.—Oh, you won't huh! You may be a big guy on the moon, but you're just a blowhard in

Mid-Continent Park. Now! I don't think you'll wander very far, till John Matson sez that you kin."

Farr lay, neatly trussed up, the end of the rope that bound him fastened to a steel stanchion. A not-too-clean wad of waste had been shoved into his mouth, to quell the stream of profanity that had accompanied Matson's operation.

"All right, Missy, now we'll cut your ropes, and we'll take that little walk I spoke of before."

"And the boys too," Naomi begged eagerly, as the ranger's keen knife sliced through her lashings.

"Nosser. Not them," flatly refused Matson. Again that queer gleam peeped from his eyes. "They lay here till we take that walk."

"Then let me take care of them." The girl, freed, sprang to her feet, ran to the prone Garry. She kneeled; "Garry, dear, are you badly hurt." His head was in her arms, white fingers searched gently through the thick blond hair.

Garry stirred, groaned. His eyes opened, stared dazedly. "Wha-what happened?"

"Farr ambushed you, hit you on the head."

"Farr. Why he's dead?"

"No, he's alive, too much alive. But just a minute, while I take care of Rade."

The boy had also come to. His face lit as the girl knelt at his side. "I'm quite all right, Naomi of the Fentons. Don't trouble yourself about me." His eyes were big with admiration. "How's the Chief?"

"Oh, I'm so glad neither of you are hurt badly." Naomi's eyes danced. "Listen boys, I think our troubles are pretty well over. She told rapidly the events of the past fifteen minutes. "John Maston," she wound up, "is the person to whom I sent Emma from the ZZ special embarkation field in New York. And she must still be here, even though her brother-in-law is so reluctant to admit it. I'm going with him, and you boys just rest here quietly. I'm sure everything will be all right." Naomi was expressing a confidence she did not feel for Matson was acting in a troublingly queer manner.

"All right, Mr. Matson, I'm ready to go with you."

The man in forest green bent over the recumbent forms of Garry and Perrin, his brawny hand tugged and tested their bonds. He was evidently taking no chances of Naomi's having covertly freed her friends.

"Okay. Come on. You go ahead of me so's I can keep an eye on you."

A zigzag, narrow path led up the precipitous side of the ravine into which the rocket-ship had descended.

As the path came over the lip of the cliff it plunged at once into the depths of a forest. Giant pines soared two hundred feet from the very brink of the precipice, their far spreading boughs meeting and interlacing to form an almost continuous green roof.

Naomi breathed deep of the fragrance, and new life flowed into her. Even the watchful eyes of her escort, the projector held ready for action, could not disturb the feeling of well-being that pervaded her. It was good to be back on Earth again, good to feel the soft slither of the humus beneath, the cool touch of the breeze on her cheek!

"STOP here!" her armed escort snapped suddenly. The curt command formed the first sounds to come from his lips since they had left the ship. There was a little clearing, where the tall-springing trees opened a space, and a thicket of man-high bushes had taken their place. The dim trail dived into the thicket, followed a tortuous course where one could scarce see a hand-breath in front.

The girl halted. Matson stood, listening, a moment, then whistled. Three notes, ascending, a pause, a trill. From somewhere ahead, startlingly close, the call was repeated. A gangling youngster appeared, goggling at the girl. He too, was in forest green, carrying a paralyzer.

"Here Jim, I want you to do something." Matson put an arm around the youth's shoulder, whispered in his ear. "You understand?" the older man finished, aloud. "Now snap into it!"

Jim bobbed his head, turned, and was gone. Naomi rubbed her eyes. He had dis-

appeared into the green so quickly, so noiseless was his passage through the thickly interlaced bushes, that she thought she had imagined his presence.

"Go on about ten yards, we'll wait there."

The girl walked forward. An opening had been hacked into the greenery, a boulder invited her. She sat down. Her guide stood silently. She noted that his vigilance had not relaxed, the projector was tensed for quick action.

A soft rustling sounded in the bushes beyond. Naomi turned to its source, but the foliage was too thick. The noise came nearer, then stopped. Only for a moment, though. Then there erupted into the clearing a buxom, gray haired woman, the pastel orchid of her silken Domestic Worker's dress fluttering with the speed of her coming. Her arms were outstretched.

"Miss Naomi! Miss Naomi! Is it really you? Oh, how I've cried and cried, wondering what had become of you." The excited hands fluttered over the girl, as if to assure themselves that she was no phantom.

Naomi was standing, her face glowing. For a moment she struggled with the old hauteur of the class she had forsworn, then her arms went out around the form of her old nurse, her head was pillowed on the ample bosom. Sobs choked her.

"Oh Emma, it's so good to see you again!"

"There, there," crooned the woman. "Don't you cry, dear. Emma's right here, nobody can hurt you." The dimpled, pudgy hands stroked the girl's hair. The words, the old familiar action, took Naomi back to her childhood.

"Emma, tell that man to go right down and untie my Garry." Just so had she pouted, many years ago, and said, "Emma, tell that boy to let my doll alone."

"You, John Matson, where have you got her man tied up? Go, let him free at once, or your life won't be worth living."

"All right, Emm, now that I'm sure this young lady is who she said she was. I thought mebbe they was spies, 'specially when she asked for you."

"Spies. You big fool, couldn't you tell this was my Miss Naomi? Now you just

hustle right along and bring up her Garry."

"And Rade Perrin too," added the girl, "but be careful that awful Jeris Farr doesn't get away."

Matson strode away. Emma turned back to her mistress.

"Dearie, what have they been doing to you. You're so thin, and worn looking. I've worried myself sick over you. Where have you been, all these months?"

"I've been on the moon, nursie dear."

"On the—!" An expression of alarm crossed the woman's face, quickly replaced by solicitude. "Yes, of course, you've been on the moon. Now you just come with old Emma, and everything will be all right." *

"But, Emma, I'm not crazy. I *have* been on the moon."

"Hush, child. Don't excite yourself. Just be easy. Emma's here to take care of you."

CHAPTER XIX.

Conquer or Destroy!

"GEE, jumping Jehosaphat, I wish I'd been with yez!" the boy Jim burst forth, as Garry finished his sketchy outline of their adventures. He had touched only the high spots, being especially carefully to avoid all mention of the ray-stone of Tycho. These people appeared friendly, but there was no use taking unnecessary chances. The safety of Naomi, Perrin, and himself, the success of their mission, the salvation of Purtell and the others left behind on the moon, depended on their utmost circumspection.

The concrete cabin of the ranger was comfortable. The chillness that still lingered in the night-air at this high altitude was dissipated by the warm glow of a rad-chro-heater, tapping the world-wide power waves that reached even this remote wilderness. The same invisible source provided light too, and heat for the gleaming cook-stove in the corner.

A simple people, they appeared, the burly ranger and his wife Julia, a buxom counterpart of her sister Emma. Two rangy apprentice lads, Jim Tolley, whom they had already met, and Mat Fistel, completed the

roll of the little outpost in the woods. Garry studied them, covertly, as he talked. Would they aid him?

His gaze shifted to Naomi. Brave girl! She seemed ill at ease under the fluttering attentions of her old nurse and maid. Months of self-reliance had done that for her. Rade was hunched over the heater, his fine drawn face pale, his eyes two glowing coals that followed Naomi's every move. A livid welt showed on his forehead, where Farr's blow had landed.

Jeris must be cold in that outhouse, where he had been taken, blindfolded, from the ship. What the devil could be done with the fellow? Impossible to kill him in cold blood, yet, living, he was a constant menace to their plans. If he escaped again, got in touch with the Aristocrats! True, he would not know the exact location of the rocket-ship, Matson had seen to that, leading the blinkered rascal by devious routes to the improvised prison he now occupied.

From the corner of his mouth Matson shot a brown stream of tobacco juice straight into the moss-filled receptacle, ten feet away. "Wall," he drawled, "you fellows have done a sight o' scrappin', and' I guess I've gotta believe that you have been to th' moon an' back—but—tell me—how much the farther have yez got? Seems to me that the folks yez left up there are bound to die o' starvation, an' you three here—we kin hide yez here fer a while, but in th' long run yez must be found by the yella men. Much as I hate to say it, after the fight yez have put up, but it would have been better had yez just lain down on that island and let the gas kill yez."

Garry came to a sudden decision. These people had hidden Emma, had shown every desire to aid him and his companions thus far. Why, they had already involved themselves so deeply in defiance of the Aristocrats that their lives were forfeit. Living here in the great forest, subject to a minimum of supervision, they were not as abject as the great majority of the Workers of the World. There was no servile bowing of those straight shoulders, frank eyes looked straight at one when they talked. He caught

Naomi's eye, a silent question, a signalled approval. He plunged.

"You would be right, Matson," he said, gravely, "were it not for one thing. On the moon we found something that's going to make it possible for us to challenge the power of the Aristocrats, to demand free pardon and safety for our comrades. No, far more," his eyes glowed as a vision rose before them.

"We have in our hands a weapon that will enable us to force the Aristocrats to their knees, that gives us the strength to demand for all the Workers their share of the Earth's goods. The little group right here in this room can reform the world."

The peal of his ringing voice ceased. A silence fell. John Matson's eyes bored into Garry's, an inscrutable mask had dropped over his bronzed features. At last he spoke; and strong emotion vibrated in his deep, slow voice.

"You be not fooling-me, man. Don't don't tell me that 'tis a tissue o' lies that you spin. To free our people from the iron clutch o' the Masters! To make o' the Workers men again, not slaves! 'Tis the thing I have dreamed of these many years, as I've wandered through the clean-green woods, and watched even the very rabbits play in the freedom that is denied to men."

He shook his head. "Nay, 'twill be of no use. I too have busied myself in plannin', foolish schemes o' gatherin' here in the wilderness a great army o' Workers. But then I wud go tuh the cities on my furlough weeks, and despair. On the one side were the Aristocrats, strong, confident, guarded by the yellow police whom Sadakuchi o' the Samurai heads, almost inhuman machines o' destruction. On the other, an unarmed mob o' slaves. Why, a full three-quarters o' the Workers are beast-content with their lot, wud lift not a little finger to battle for liberty. An' nine-tenths o' the rest are a flock o' headless sheep, ready to run if an Aristo so much as scowls at 'em. So I'd slink back to my trees, and fergit my dreams.

"And now, you come. You tell me you've bin to th' moon. You have a weapon that the Aristos cannot stand against. Mebbe

so, mebbe so. But you will not succeed. The Workers will not stand by you. No matter how strong the weapon you place in their han's, they will not use it."

Garry smiled bitterly. "You tell me nothing I do not know already, John. Even with the little group I led those slave traits you speak of have given me greater trouble than the very enemies, human and natural, from whom I have fought to save them. That fellow tied up outside is an example. But," and his face showed grim and powerful, "this power we bring from the moon needs no great army of Workers, no tremendous uprising of Slaves. What I said before I meant literally. *The little group in this room, unaided, can defeat the Aristocrats, dictate a reformation of the World. We can conquer the Earth, or destroy it!*"

MIDNIGHT. A full moon spread a silvery blanket of light over the tops of the pine forest in the deep fastness of the Rockies. Apparently from the very side of a craggy peak a man-bird soared, a scarlet Arrow runabout, with a black WC emblazoned on its nose. Naomi of the Fentons was again driving her gyrocopter, hidden for half a year in a mountain cave, carefully tended. Straight up into the New York directional beam the whirling vanes lifted its load—Naomi, Garry, Rade—and—black and mysterious under the seat—a great metal box filled with white lumps of the ray-stone of Tycho.

"Wasn't it lucky, Garry, that I had left my old travelling robe in the plane?"

Garry looked fondly at his beloved. Once more she wore the garb of an Aristocrat, and his pulse leaped as he realized anew that this exquisite girl had given up a life of the utmost luxury for love of him.

The Arrow reached the two-thousand foot level, leaped eastward as her automatic controls caught the surge of the beam wave for which they had been set.

Beneath the rustling, silver blanketed tree-tops, Matson, and Jim, and Mat, and even the two women toiled. The cautious ranger, skilled in the stratagems of the wild, had suggested that the ray-stone supply be stowed away from the ship. "If the yel-

low men locate the ship, then yez will still have the ray-stone to battle with. An' if they find the ray-stone, then yez will have the ship to go and git some more. Whereas, if yez leave the stone in the ship, and they find the ship—'tis all over."

Drum by drum, tank by tank, box by box, the long night through, the five Workers carried the precious store through the dark forest to the cave where the Arrow had been hidden.

All night the devoted five had worked, secure in the covering blanket of the forest night. At last Matson swung a drum from his huge shoulder to the dry floor of the cave.

"That's the last. And it's me that's glad there be no more. For the dawn light glimmers already in the east."

"John!"

"What is it, Emma?"

"I thought I heard a rustling in the brush outside, just before you came up this time."

"Ah, don't be timorous, woman. There be no one within fifty miles o' this place but us."

"And yet, I'm nervous. How about the prisoner?"

"Safe bound in the tool-house. He'll never get out of there unhelped."

"Are you sure?"

"Sure as that I be standin' here. Come, let's go away from this place, before the light breaks. We be all dead for the want o' sleep."

"I'm goin' up to the tool-house, to see if that Farr is still there. I have a queer feelin' in my bones."

"There's no escapin' the persistency of you women. Jim, you go. Then join us at the house. We can sleep but two hours. Then we must be up an' around, as if nothing had happened. Emma, do not forget, you must remain hid durin' the day. 'Twould be too bad if you should grow careless now, after all these months."

* * * *

The scarlet Arrow hovered over the leaping pinnacles of the great city, just as the false dawn grayed in the east. The air was almost deserted, only the lone green patrol

ships soared here and there above the sleeping metropolis. A slant eyed flier in scarlet glanced carelessly at the gyrocopter. He yawned. That Aristocrat woman was out early, or homing late. Really he should hail her. But he might get a wiggling for his pains. That was a World Councillor's ship—far be it from him to interfere with the amours of the Aristo women. If the Masters couldn't keep their women in order, 'twas no business of his.

SIX months before, he would have been on the tail of that gyro' in hurry. A confidential alarm with the personal signature of Sadakuchi himself had ripped through the air for just such a vessel as this. But that was a long time ago, and the sleepy patrolman had forgotten it. So he yawned again, and looked searchingly down at the police airport. Would that damned relief of his never come?

The Arrow drifted slowly down, alighted softly on the old familiar roof. Naomi slipped from the vessel. A whispered, "Careful dear," came from beneath the cowl-ing, where Garry and Perrin crouched, hidden. She waved a careless hand, belying the trembling that shook her slight form.

Had the settings of the alarm signals, the door seals, been changed? Would they rouse the house; refuse her admittance? Here was the crisis of the adventure.

She stepped into the guardian beams of the elevator door, her heart thumping as though it was striving to betray her, to sound the alarm. But the ornate gold portal slid open—all was well! As the silent cage descended she thought of the last time she had been in this moving chamber, the scene with her father, her imprisonment, her escape. Lucky that only the door of her suite had been barred against her. She must remember not to approach that corridor.

* * * *

To the two cramped in their hiding place, hours seemed to drag slowly by as they waited. "Damn it," Garry breathed in the ear of his companion, "I shouldn't have let her go. Suppose she is caught, suppose something happens—"

The boy stirred a bit. "She'll take care of herself, Mr. Parker. She's wonderful, nothing can beat her."

"I hope you're right. God, I hope so." And the two crouched silent again.

A soft step on the roof outside, someone climbing into the gyro, the long awaited voice. "Everything's all right, boys. I left the message. And here—look what I have for you."

The lifting vanes whirled through a crescendo of power as Garry and Rade seized the bundle thrust down to them. Two Aristocrat robes—the girl thought of everything!

"Where now, Garry?"

"North, above the city limits. The old Ashokan reservoir, that was drained when the great aqueduct to the polar ice cap was completed. The pipe leading from it is a tunnel thirty feet in diameter. Plenty of room to hide, plane and all, in that."

Ten minutes later the plane zoomed down to the hiding place. Just as it disappeared in the gaping aperture of the abandoned duct a red sun poked its disk over the horizon. A superstitious police pilot, viewing New York bathed in the red glow, shuddered. "Looks just like blood," he muttered to himself, "something terrible is going to happen."

* * * *

Henry of the Fentons rose from the table. Outside the day had clouded over, was leaden dull, dreary. But there a flood of warm simulated sunlight bathed the heaped flowers, gleamed from the crystal faceting of the graceful breakfast service. A young and pretty Worker woman, her charms enhanced by the orchid of the Domestic Service, hovered near, unobtrusive, but ready to serve the World Councillor. No mechanical servants, no synthetic food, for the Aristocrats. The art of fine living required human servitors to add the last touch of finesse to luxury.

A half year seemed to have aged Henry inordinately. The hair above his temples was fairly white now, the wrinkles deeper into the leather of his face. Sometimes, when he thought himself unobserved, a haunting sadness softened for a moment the

harsh lines. But that lion head was as stiffly erect, that stern mouth as uncompromising as ever.

The oligarch strode through a softly opening panel in the wall. This room, from which the western hemisphere was ruled, had no trace of luxury. Blank walls of translucent glass, a polished floor of oak. Square in the centre, a massive desk. The Fenton started. From the surface of that desk, which should be bare at this early hour, a yellow paper stared at him. He snatched it up.

"To the World Council," he read:

"We hold within our hands the power to destroy the world!"

At nine a.m., Eastern Standard Time, we shall demonstrate our power in the City of New York!

At ten a.m. we shall make known to you our demands.

Unless you accede to those demands, we shall proceed to make the earth uninhabitable.

For the Workers."

THE thick spatulate fingers clenched on the paper. For a moment he stared, rage suffusing his face with purple. Then, a thick voice snapped—"Tokisan!"

On the wall opposite appeared a scarlet clad, squat, slant-eyed figure. The captain of the household guard. "What is it, sir?"

"Someone entered this room last night! Who was it?"

"No one, sir. There has been no alarm."

"You lie! Someone was here and left this paper on my desk."

"Impossible, sir. I tested the seals myself after you left. They were in order. There was no report of any disturbance during the night. If any one had forced the door, we should have known it. Any one, that is, except you, and—", he hesitated.

"And who? Talk up, you fool!"

"And—and the one whose name you have forbidden us to mention."

"My daughter! Were not the seals changed to bar her?"

"No, sir."

"Why not? Someone will suffer for that!"

"You gave no orders to that effect, sir."

Henry of the Fentons glared. Impossible that she should have dared to enter this house. Impossible?

"Place every Worker in the house under arrest." The swift commands crackled. "Search every nook and cranny of the house. Find out if anyone heard or saw anything unusual. Report to me at once. Go!"

The figure disappeared from the screen.

The World Councillor picked up his communication disk. "Police headquarters."

"Police headquarters," came back the reply.

"Henry of the Fentons. Give me General Yamurai at once!"

"Sorry sir. The General has just been called to Level One. Something is wrong down there. I'll try to get him for you as quickly as possible."

"What time is it?"

"Nine-five, sir."

From somewhere without came a dull rumbling roar. The room seemed to vibrate as if the great tower at whose pinnacle it was had been suddenly struck by some tremendous force.

* * *

Far underneath the city, beneath even the teeming industrial activity of Level One, where the broad stream of the Hudson flowed in darkness to the sea, the white beam of a hand-flash lit momentarily the dripping brick walls of the great river's prison. An answering flash came from far ahead. Scuttlings, scrapings, the startled squeal of a water rat on the two-foot runway that bordered the stream. The flashes showed again, nearer to one another now. Two dim forms met in blackness.

"All right, Rade? No trouble?"

"Not a bit, Garry," came the whispered reply. "The Aristocrat robe Naomi got for me sure worked wonders. I heard some of the Workers curse as I passed. I used to do that myself when one of the inspectors came through. That's what they thought I was."

"Of course, that was the idea. The cops wouldn't question you either. Got the ray-stone placed?"

"You bet. I worked inward from a mile

away from the man-hole, just as you suggested. By the time I reached it I could already hear shouts coming from where I started. They'll never find the stones, plenty of places to hide them. How'd you get along?"

"Great."

"There's only one thing that worries me. That stuff's going to hit the Workers first, poor fellows."

"I thought we thrashed that out last night, Rade. It's unfortunate, but some of the Workers will have to be sacrificed to the common cause. We couldn't warn them. As Matson said, ninety per cent of them are too downtrodden, too bestially content with conditions to back us up. They'd be sure to give the whole thing away."

"That's true. But it seems tough."

"It's the way of the world, my boy. Every great reform has been purchased with the blood and suffering of the very people it benefited. But enough of this. You shoot back to Naomi and the gyrocopter. Go back at once to Mid-Continent Park and load up with ray-stones, then return just as fast as you can make it.

"I'll hit for Level Three, where the broadcasters are. I think I know a way to sneak our demands through.

"I'll try to get back to Ashokan by six this evening. But if something happens, and I don't show up, distribute a double quantity of the ray-stone to-morrow morning at nine."

"Do you think the Council will give in?"

"Not if I know them. I expect we'll have to give them another dose tomorrow."

* * *

Down in the Rockies.

"John, John," Jim Tolley was shouting as he ran up the little glade where the Matson cabin stood. "John, he's gone!"

The big form of the ranger appeared in the doorway. "What's that," he grasped the panting youth by the arm, "what's that you say?"

"He's gone. The prisoner got out! Look," he held up a frayed rope, "worked this against the wall till he wore it through. There's blood here. Bet it took him all night. Then he smashed the door, don't

know what with. Maybe his shoulder, he's a powerful brute."

"My God! If he gets to the Police we're done. Come on, after him. And pray we're in time. Damn good thing I took his communication disk away."

Matson leaped inside, was out again in a moment with his paralyzing tube. "Told Mat to stay here, look after the women," he snapped, as the two loped through the woods. "If the two of us can't get him, three can't."

The trail was easy to pick up. Farr was no woodsman to glide through the forest without leaving betraying marks. "He got out just before dawn," Matson muttered. "Look, the dew fell on these leaves after his foot pressed them down, but this moss was already wet when he passed."

"The trail points straight for the cave where we hid the stone. Think he's hiding there, John?"

"Mebbe. I hope so. But it looks to me like he musta' seen or heard something. Yeah. Look here. He stopped here for a moment, behind the tree. Sure. There's my tracks beyond. And here's where he bedded down, watching us at the cave mouth." The woodsman was talking more to himself than to his companion, as he read the message in the ground, plainer to him than print.

"The sonuvagun watched us. But not long. He knows where the stone is, then. How about the ship? No, see here, it was on my very last trip that he got here, here are all the other tracks, *beneath* his footprints. Thank God for that, at least."

"Now he angled away, down the slope. Come on, Jim, we've got to hurry. If he kept on this way he ran right into the police post, down at the bottom of Three Forks Gorge."

"Kin' we catch him?"

"Dunno. He's had an hour's start."

Silently now, the two slid through the forest, like two hounds on the scent of their prey. Silently, and fast. But when at last the trail debouched into a hillside clearing, the pursuers could see, far below, the prostrate figure of the fugitive, tattered, torn, bleeding—a scarlet clad policeman bending over him.

"Hell! Too late!" Jim's exclamation was a groan.

"Mebbe not." Matson's face was grim, his paralysis projector up. "Mebbe he ain't had time to say anything."—A slither of invisible emanation. The swarthy form below quivered, lay still. Sometimes death resulted. Would it this time?

"Wonder how much he had time to tell?" the grim-faced Matson muttered as he turned to flee the scene.

GARRY came out of the mouth of the tunnel into a world of indescribable confusion. A furious blast of wind howled past, plucked at him with raging fingers. He snatched hold of an iron support, pulled himself back into the tunnel just in time to avoid being hurled from his feet. Very cautiously, holding on, he looked out again.

Level One was a wreck. A terrific cyclone roared and howled unimpeded down the great corridors. Countless tons of air hurtled by in a vain attempt to fill the vacuum. Timbers, chairs, gyrocopters, tables, steel girders, and vague darker shapes that might be people, scudded through the murk, torn loose from their moorings by the swift, impalpable air.

Garry put out his hand. It was almost wrenched off by the pressure of the invisible blast. He received the impression of a solid wall moving with incredible speed. It was hard to breathe, even within the shelter, for the air swirled out to join the hurrying tide.

Parker pressed the "time" button on his wrist communication disk. "Nine thirty-two and a half," intoned the Central Chronometer Broadcast. So Level Three was still unaffected by the catastrophic storm that raged beneath it, at least to the extent that the broadcast systems were still intact. That was a relief. Only through their functioning could he hope to cut in with his ultimatum.

"Hell, I'd never get there alive," he muttered to himself, "I'll have to wait for this to die down. Whew, I've seen storms and storms, but they were mere babes compared to this one. Wonder how long the ray-stone will keep sucking up the air?"

It was almost a half hour before his question was answered. Garry watched the interminable debris shooting past his place of refuge, heard the screaming chaos of that stunned world.

Then, as abruptly as it had commenced, the great wind died to a faint whisper. A kaleidoscope of tossing wreckage crashed heavily to the ground. The storm was over; the cached ray-stone had reached the limit of its absorption.

Parker's ears still rang with the suddenly stilled clamor when he ventured out into an unfamiliar world. Level One was obliterated under a tangle of twisted wreckage. Here and there in the jumbled mass were things that caused him to avert his eyes quickly. Remorse welled within him. All these men had been killed by him, just as directly as though he had used a ray-gun. Was the cause worth it?

"Yes," he said angrily to himself, "only a few are slain of all the Workers; there are myriads who some day would bless this morning's work." So he stilled his uneasy conscience, hurrying along the deserted corridor as fast as he could.

There was only five minutes to cut in on the broadcasting from Level Three. The moving ways were out of commission; no doubt the spiral ascenders were also smashed. He dared not use the elevators. The whole way would have to be made on foot.

In all his journeying through hurricane-twisted Level One, not once did he come upon the slightest sign of life. He felt the desolation more than on the reaches of the Moon. There at least it was natural; but here it was man-made; he, Garry, had done this.

He climbed painfully up the choked stationary ascender into Level Two. As he swung out of the entrance into the common amusement street, once gay with cold light radiance, he found himself suddenly enveloped in a world of nightmarish shadows and screams and thudding feet.

The long corridor, ordinarily dedicated to garish pleasures, was filled with running, gesticulating Workers, a surging mob impelled by panic fear, flowing like a resistless tide—toward the ascenders to Level

Four! A lank, squint-eyed individual, his clothes awry, a deep gash dripping blood from his pasty face, ran headlong into Garry.

Garry braced himself under the blow, and cried angrily to his assailant. "Here, what's the idea?"

The Worker shook himself clear. His squinting eyes were lit with madness, with stark unreasoning fear.

"It's comin' again, I tell you. At ten o'clock! We'll all be wiped out. The Aristos are killing us Workers. The lower levels' to be blown up. Up to Level Four. 'S our only chance!"

And shouting unintelligently, he ran on.

Others, grim faced, panic-stricken, bestial, were roaring by in a common flood.

"On to Level Four!"

"Kill the bloody Aristos!"

"I heard him say as plainly as I hear you—ten o'clock we let loose again."

"It's not enough to send us to the Idlers' Colonies—they want tuh get rid uv us all at once!"

And above the confused clamor rose a steady, ominous roar that became a welded, beating chant of hate.

"Kill the Aristos! Kill! Kill!"

THE Workers were trapped rats, turning at bay to snarl and snap at their oppressors. A revolution was under way—unorganized, desperate, impelled by fear and the sights of Level One!

Garry felt a fierce surge of exultation. The Workers, the meek submissive slaves, were aroused. They thought the Aristocrats had engineered the cataclysm below, had deliberately planned their extinction. He had not planned this, but perhaps this was the way out—destroy Level Four, the home of the Aristocrats, beat them to their knees. For a moment he envisioned himself the leader of this disorganized eruption.

Then cold reason descended on him, chilled him to the bone. These poor devils, what could they do, unarmed, against the disciplined battalions of Police that even now were congregating on Level Four. Ray-guns, disintegrators, paralyzing pro-

jectors—why, they'd sweep the attacking horde into nothingness.

The howling berserk Workers were snatching up metal rods, table legs, everything movable that might serve as a weapon. Gleaming machines were torn to pieces by frantic naked hands for the metal pistons, struts and rods. Then with one voice the great flood roared on:

"On to Level Four! Death to the Aristos!"

Garry awoke to the necessity of doing something, of stopping the inevitable slaughter. He hurled himself into the pushing, jostling mass. Head down, fists and elbows flying, he transformed himself into a human battering ram. He *must* reach the ascendor before too many of the madmen had rushed to meet extinction. At length, bruised, battered, bloody, he found a precarious foothold on the guard-rail over the motionless ascendor.

Balancing himself unsteadily, he raised his hand, shouted to make himself heard above the tumult of the struggling mob.

"Friends, Workers!" he bellowed at the top of his lungs, "you are mad, insane. Sadakuchi's Police are waiting for you in Level Four. They'll blast you into nothingness. Not a man will survive. Down with the Aristocrats, I say too. But not this way. Leave it to me. I know a way to beat them at their own game."

The great voice soared over stilling cries, as the Workers paused at the sight of this strange figure haranguing them. A sea of blood-stained faces. Garry exulted. He had them listening. They would understand.

Then suddenly, out of the uncanny calm, came a single angry shout. "It's a bloody Aristo! Kill the—!"

A roar went up, the snarl of wolves sniffing blood. A tossing ocean of weapons, of insane fists. Garry looked at his still outstretched arm in a spasm of horror. *He still had on his Aristocrat cloak!* Then the furious mob was upon him!

He was torn off his perch, went under a storm of blows and clawing fingers that sought to tear him into little bits. A myriad feet stamped and pounded on him. Still

fighting, Garry gave himself up for lost. He wriggled and squirmed, warded off as best he could the hail of fists and legs.

Then there was a surge over and beyond him. "Ten o'clock—" the cry went up—"let us through; Level Two is going to be blown up."

In an ecstasy of fear, the combatants forgot their victim, shoved in stark panic up the ascendor, trampling each other in their mad rush to be out of the doomed area before the expected blow of the Aristos fell.

Somehow Garry managed to totter to his feet. He was engulfed, swallowed up, a helpless chip tossed aloft in the vast flood. Up, ever up, the rush carried him, past Level Three, that was a hazy glimpse of power and television units, onto the choked ascendor to Level Four.

A last surge and he was spewed out into the ordered magnificence of the abode of the Aristocrats. Garry just had time to envision the great crystal palaces, the lovely gardens, on this roof of their world, as the maddened Workers spread out in a disorderly flood, when he saw something straight ahead.

The Police! Ranks on ranks of them, yellow men, trim, disciplined, silent! A single officer stood coolly in front, surveying the erupting Workers.

The mob was crazy now. The pushing, driving fear from below and the sight of the hated Police ahead, awoke frenzied rage in their breasts. With cries of execration and hideous blasphemes they rushed upon the waiting foe.

GARRY saw the arm of the officer go up. He knew what that meant. Heedless of being trampled, he threw himself flat on the ground. Above his quivering back he felt a stab of searing heat. The ray guns!

Screams of anguish, wails of fear, and glowing twisted bodies fell in heaps all over the crystal surface. Garry was submerged in a deluge of smoldering forms.

Then above the piteous cries of the tortured rose a fierce animal-like shout. He twisted and gasped his way from under the charred bodies.

The great crystal level was a seething mass of fighting, clawing men. The Workers in their multitudinous numbers had broken the ranks of the Police.

A thrill ran through Garry. Though he knew it was suicide, though he knew the Police would reform and mow down the embattled Workers, he could not restrain himself. With a wild cry that sounded strange in his ears, he hurled himself into the fray.

What followed was forever dim in his memory. Somewhere he snatched up a steel rod. He saw a Policeman levelling his deadly ray-gun. A crash of the heavy rod, and down went the yellow man in a tangle of gore.

Garry went mad, utterly, triumphantly mad. His bloody weapon swung and crashed. Men dropped their cudgels, sprang upon the Police to hammer them with bare fists, to strangle them with animal snarls.

But slowly, inevitably, the Police reformed. Garry had a glimpse of a cold, unflustered, aloof Oriental, a single star on his shoulder strap, issuing calm commands into his communication disk. Sadakuchi! Parker saw red, rushed for him. He collided heavily with another Worker, stumbled and fell. That saved his life!

A withering blast from ray-guns, disintegrators, swept the crystal plain. A paralyzing beam, deflected somehow, caught him. He sank into unconsciousness.

* * *

As he weltered out of the influence of the ray, he heard a murmur of voices, faint, far-off at first, then clearer.

"Hello, here's an Aristocrat. How'd he get here?"

"That's funny, thought they were all hiding in their palaces, leaving the dirty work to us."

Garry's eyes opened slowly:

"Sssh!" A warning hiss.

It was ludicrous to see two members of the Police jumping to attention. All over the great area were strangely contorted piles of bodies. Not a live Worker was to be seen. The Police in little groups were searching methodically.

"Are you hurt, sir?" There was a note of respectful solicitation in the officer's voice.

Garry shook his head weakly. Now he thanked his stars for the Aristocrat cloak—a wounded Worker would get short shrift. Perhaps they would let him go.

But his hopes were dashed.

"That's very good, sir. Would you be gracious enough to accompany us?"

Strong arms set him on his feet gently.

Garry simulated the haughty indignation of an Aristocrat.

"What do you mean, accompany you? You are overbold, sirrahs. I go my own way!" he said cuttingly.

"Sorry, sir, but those are our orders. From the Chief himself. Everyone found alive must be brought before him." Respectful, but insistent.

Garry darted a hasty glance around. Not a chance for escape.

"Very well, if I must. But you'll regret this outrage."

"I can't help it, sir," the Policeman said doggedly.

With a sinking heart he was led through a welter of blasted bodies, over to where the single-starred officer was standing. He racked his brain furiously, but there seemed no way out of his predicament. Where were Naomi and Rade—were they safe? They'd have to carry on.

Sadakuchi surveyed him coldly, a squat, high-cheeked Oriental with an arrogant air and a cruel droop to his lips.

"What have you here," he purred to Garry's escort.

One of them explained. "An Aristocrat, your Excellency, whom we found lying amid the Workers—caught by a paralyzing ray, evidently."

"An Aristocrat, hmm." Garry felt the slant black eyes boring into him. He steeled himself for the ordeal.

Unexpectedly Sadakuchi's arm shot out, ripped open the collar of Parker's robe. Garry started forward, but the Police gripped him, hauled him back.

A supercilious sneer spread over the Police Chief's sleek countenance, while

Garry raged and struggled.

"Just as I thought—a Worker masquerading."

ON Garry's chest, as on the chests of all Workers, there had been indelibly impressed at maturity, his number.

"What is your name?" The arrogant command snapped at him. Parker was silent.

"A rebellious dog! We'll soon make you talk. Hufan!" He spoke low into the communication disk. "Bring me the Worker's Register—C file."

Sadakuchi turned away as though he had forgotten the prisoner's existence. Garry strained to get at him. Just one free moment, he panted, and he'd be satisfied even if death would follow inevitably. But the encompassing arms were too strong.

A gyrocopter whipped through the air, settled down slowly. A Policeman jumped out with a fat volume, and handed it respectfully to his Chief.

Sadakuchi turned the thin metal leaves.

"Ah, here we are—C12574, Garry Parker, Rocket Pilot."

A subtle sneer enveloped his features.

"So, you are Garry Parker," he said contemptuously. "Most interesting indeed. Naomi of the Fentons must have gone mad to take up with a slave like you." He motioned to the waiting Police. "Take him to the Gaol. I'll attend to him later!"

And while Garry was being dragged away, shouting threats and objurgations, Sadakuchi meditated.

* * *

Henry of the Fentons sat glowering before his desk. In grim silence he stared straight ahead, where, in place of what had been a blank wall of translucent glass, appeared a

vast and moving panorama. There was being depicted the maelstrom of wild fury, the mad onslaught of the fear-ridden Workers, the cold battling of the scarlet police, the flashing ray-tubes of destruction, all the chaotic scene of the metropolis, so clearly limned that the watcher seemed in the midst of it. The clamor and turmoil filled the room, the shrieks of the dying, the crisp commands of the police officers, the hoarse shouting of the rioting Workers, mingling and merging into an indescribable continuous roar that was the voice of the mob. A tortured face loomed large on the screen, crazed eyes stared out at the obligarch, a shriek of agony—and the face melted into nothingness. Impassive, no sign of emotion on the cold mask of his face, Henry sat and watched.

A thought seemed to strike the Fenton. His hand went out, touched a button on the desk. The noise was stilled; in silent pantomime the pictured conflict continued. He spoke quietly into the diamond communication disk.

"Anton."

"Yes sir." The suave voice of his secretary responded.

"Call a Council meeting for a half-hour from now. I think this will bring Salisbury and Na-jomba around to my idea, that the idle Workers must be done away with."

"Very good sir," came the non-committal reply. "Council meeting, thirty minutes from now."

"I shall be here; switch them right on the screens without bothering to notify me."

"Yes sir."

"That will be all."

(To be concluded)

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FOR AN IMPORTANT ANNOUNCEMENT



Science Questions and Answers



THIS department is conducted for the benefit of readers who have pertinent queries on modern scientific facts. As space is limited we cannot undertake to answer more than three questions for each letter. The flood of correspondence received makes it impractical, also, to print answers as soon as we receive questions. However, questions of general interest will receive careful attention.

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These nationally-known educators pass upon the scientific principles of all stories.

Transmutation

Editor, *Science Questions and Answers*:

Has the transmutation of elements ever been performed successfully artificially? Is this likely to lead to the release of inter-atomic energy? If so how can it be done? I know that radium disintegrates automatically into lead, but this is a natural process. What I want to know is, has the transmutation ever been accomplished purposefully by men?

Ben J. Rieger,
Dallas, Texas.

(The distinguished English scientist, Sir Ernest Rutherford, did succeed in causing transmutation in what Sir Oliver called, "one of the most remarkable experiments made by man.")

Rutherford had the belief that if he could bombard the nucleus of an atom, he could break down the nucleus and from that disintegration complete atoms of another substance would be released. He knew, for example, that the nucleus of the nitrogen atom contained 14 protons and 7 electrons which balances the 7 electrons which revolve about the nucleus.

Since the hydrogen atom consists of one proton and one electron, Rutherford saw that the nitrogen nucleus consisted of the building blocks for a number of hydrogen atoms. If he could break down the nucleus, the electrons and protons would naturally cling together in pairs, and hydrogen atoms would result.

Rutherford's problem was to find a method of bombardment that would be effective. He utilized radium, the gamma rays shooting off at a speed of several thousand miles per second acting as projectiles of unusual power. His experiment, at least on the laboratory scale, was a success. Although the minute nitrogen

nuclei were very difficult to hit, thousands of hits by the radium projectiles did occur and hydrogen flew out of the nitrogen.

Naturally no power was obtained from this experiment. In fact energy (the kinetic energy of the radium projectile) had to be supplied in order to effect the transmutation. But Rutherford's experiments do indicate that transmutation is no idle dream. The only question at issue is, what is the cost and what do we get from it.—Editor)

Motion of the Stars

Editor, *Science Questions and Answers*:

I read with interest the questions that E. V. Anderson asked, and your answers in the August number on page 421, and also studied diagrams.

Those diagrams, however, brings up another question and that is—do we ever see the actual position of any star?

Take for example a star whose light would take a year to reach our earth and during that time that star has traveled 100,000 miles. Wouldn't that star be a 100,000 miles from where we think that we see it?

Fred G. Michel,
887 Milton Street,
Oakland, California.

Mr. Michel's point is very well taken. Stars are continually moving and naturally if it takes years for their light to reach us, they have altered their positions considerably in the interim. But, for most stars, this change in position is not apparent to us. The stars are so very far away that even their motion

(Continued on Page 711)

during years is insufficient to show any appreciable change in their position to us.

It is stated by astronomers, in fact, that there are less than 200 stars that change their positions in the heavens due to their motion by one second of arc per year and this motion is equivalent to that of the thickness of a thread seen at five hundred feet. The greatest proper motion recorded for a star is for V 243 which moves nine seconds of arc per year.

Consider, for example, a star at the distance of Alpha Centauri which is one of the nearest stars to the solar system. Alpha Centauri is at a distance of 25,000,000,000 miles from us. Let us assume that it has a proper motion as fast as 10 miles a second. Then in four years it would have moved 1,340,000,000 miles.

But this movement, at Alpha Centauri's great distance from us, is equivalent to the motion of only one inch seen at a distance of 1900 feet. The star for all practical purposes is therefore "fixed".—Editor)

The Dinosaur

Editor, Science Questions and Answers:

Your writers have often mentioned great prehistoric animals in their stories—such as the dinosaur. Did these animals really exist? What did they really look like and how large were they? I would appreciate an answer from you, and if possible some sort of an illustration of one of the beasts.

Harvey J. Wright,
Sandpoint, Idaho.

(Dinosaurs did actually exist and roamed the earth some 30,000,000 years ago. They were the largest of carnivorous animals and they lived during the age of reptiles in the company of giant crocodiles and turtles, flying reptiles, and the great Iguanodon.)

It is quite possible that the beasts were so large that they were not quick nor mobile enough to fight out the struggle for existence in a world of constantly changing conditions. They perished, but their fossilized remains have been discovered and reconstructed into a semblance of the originals. The illustration herewith gives some idea of their size and the general appearance of the skeleton.—Editor)

Reproduction of a dinosaur 47 feet long. This was the largest Carnivore that ever lived. Its size may be compared to that of the man.

(From McFee's *Wonderful Story of Science*—Crowell)



Combustion

Editor, Science Questions and Answers:

What is really fire, or rather what is really combustion, and how does it come about that the molecules (if not the atoms) of a body are apparently destroyed, or scattered and transformed?

In other words, how does destruction (or transformation) take place and propagate itself from molecules to molecules after the first one is ignited? (I was almost going to say contaminated by that unknown destruction.)

Why has such destruction of bodies been used solely to generate heat in other bodies from which power is created, instead of utilizing that original destruction (or disintegration), to create a more tremendous force?

Louis Romanet,
10928-126th Street,
Edmonton, Alberta, Canada.

(The term combustion means "burning"—the combination of a substance with another substance such as oxygen or chlorine, etc., to produce light and heat.

Combustion involves only a chemical change in which light and heat are given off, and the molecules—not the atoms—are changed in the process.

Thus, in the burning of coal—when coal or carbon is united with oxygen and heat is applied sufficient to start the combustion—the carbon and oxygen molecules are united, their identity destroyed and a gas, carbon dioxide, is formed.

Once the combustion has started, if it can produce sufficient heat, it will cause the combustion of more oxygen and carbon, and he spread through the whole mass of the coal. In brief, the very combustion of a molecule of carbon and one of oxygen provides sufficient heat to start the combustion of two more molecules.

The atoms of carbon and oxygen are not destroyed. If the proper process is used the carbon dioxide can be broken down and oxygen and carbon obtained again.

Combustion is therefore quite different from the breaking down of actual atoms in order to release their energy. Combustion is simply a chemical combination of substances that yields heat and light. The fire that accompanies combustion is only the luminous heated particles.—Editor)

On Pluto

Editor, Science Questions and Answers:

Planet X, according to Bode's Law, should be in the neighborhood of four billion miles from the sun, if I am not mistaken. Have any discoveries of note been made concerning it?

Kae Williams,
P. O. Box 275,
Loyalton, California.

(The latest evidence on Pluto (planet X) indicates that its distance from the sun varies from 4,000,000,000 to 7,400,000,000 kilometers (approximately 2,750,000,000 to 4,630,000,000 miles). It has, therefore, a considerably eccentric orbit. The planet is at present moving toward the perihelion or shorter eccentricity of its orbit, and will reach its minimum distance from the

sun about 1989. The Pionian year is therefore in the neighborhood of 250 years long.

The apparent diameter of the planet is about $2\frac{1}{2}$ times that of the earth, or about 20,000 miles. It is believed by many astronomers that further observation will show Pluto to be even smaller than the earth, perhaps not much larger than Mars. The planet moves so slowly in its orbit, covering only 30,000,000 miles (as compared to about 300,000,000 miles a year covered by the earth in its orbit) or slightly more than one degree of arc per year, that we must be patient for a few decades before definite evidence of its size, orbit and other characteristics are ascertained.—Editor)

The Reader Speaks



IN this department we shall publish every month your opinions. After all, this is your magazine and it is edited for you. If we fall down on the choice of our stories, or if the editorial board slips up occasionally, it is up to you to voice your opinion. It makes no difference whether your letter is complimentary, critical, or whether it contains a good

old-fashioned brick bat. All are equally welcome. All of your letters, as much as space will allow, will be published here for the benefit of all. Due to the large influx of mail, no communications to this department are answered individually unless 25c in stamps to cover time and postage is remitted.

Address all letters for this department to Editor, Wonder Stories, 98 Park Place, New York.

A Form of Energy

Editor, WONDER STORIES:

For several months an interesting but unfruitful discussion of time travelling has been going on. Readers and authors alike have been submitting all kinds of thoughts about this subject, the sum total of these thoughts being practically nothing.

The reason for this lies with both authors and readers—especially with the former since it is they who supply most of the ideas about time travelling discussed in "The Reader Speaks" column without giving satisfactory explanations of these ideas. Most authors are content to invent time machines of all sizes and shapes without attempting to describe their operation. This they leave to the reader's imagination; and if his imagination happens to be poor, the story may be spoiled as far as he is concerned. Henry F. Kirkham, for instance, enters into an exceedingly long-winded, supposed explanation of the time machine in his story, "The Time Oscillator", which conveys very little to the mind of the reader and merely fills space.

Almost all authors consider time as being a dimension, preferably the fourth. It appears to me that these authors have not thought very much about time for if they had, they would not have chosen the fourth or any other dimension as the time dimension. The reason is that if time is imagined to be a dimension, IT BECOMES PART OF SPACE! The leading physicists of today believe that time and space are separate and different. Therefore, when a writer who is writing a time travelling story seeks a scientific background for it, whose views should he accept, his own or those of the bright lights in the field of science? There is only one answer. Yet authors persist in employing their own, often incorrect, ideas.

The point I wish to emphasize is that all time travelling stories ever written would have been more satisfactory, more interesting, and far more logical if the authors had considered time as being not a dimension but as being A FORM OF ENERGY!

Mr. Kirkham, however, seems to be definitely at fault in one place. It is obviously impossible for a thing to exist before it begins to do so. Yet in Mr. Kirkham's "Time Oscillator", the time machine which was completed some time after 1900 A.D., goes back to several thousand years B.C. At the time of Atlantis the metal used in the time machine was lying in the ground in the form of ore. It could not possibly exist in the machine in the form of steel or some such metal at the same time that it was in the ground as ore. This same error is true of other authors. I suppose the sole reply to this accusation is that the author of a science fiction story may do as he pleases merely because it is fiction, not fact.

In my humble opinion, the only time travelling story published in *WONDER STORIES* which was worth the paper it was printed upon was Dr. Bruser's "Fitzgerald Contraction". The value of this story's plot was greatly enhanced by the large amount of fact in the story. Altogether too many stories, time travelling and otherwise, contain too little science to warrant their being called science fiction, many of them being just glorified "Wild West" stories.

As for paradoxes, here is a fairly good one. If a man travels into the future to see how he is to die, he will not find out until the moment of his death. It will then be too late for him to turn back and consequently he will expire. The question is: If someone sends the time machine with the corpse in it back ten years, will the man come back to life or will he remain dead? If he revives, Nature will be chastised as he has

already died. But if he does not revive, he will be dead ten years before he died! Again Nature will be chastised!

I would be extremely pleased to continue this discussion with anyone who might care to communicate with me.

Milton Kaletsky,
2301 Morris Ave.,
Bronx, N. Y.

(Mr. Kaletsky makes an indictment against authors of time travelling stories that they will have to answer, to clear themselves before the judgment board of our readers. We invite our authors, therefore, to come forward and explain away Mr. Kaletsky's accusations.)

We do not insist, in our editorial policy, that a story must have a terrific amount of scientific detail; but we do ask that it have enough to make it plausible. We received a story from an excellent writer. The scientific idea was quite original and novel. But although the writer used considerable scientific detail to explain it, the editors never became convinced that the device was plausible. The story was not accepted.

Each screw or bolt on a machine does not have to be described; but the net effect of a writer's description must be that the reader will say at the end, "Yes, this could exist."

As for the paradox I would certainly be a mixed up state of affairs, if what Mr. Kaletsky relates should occur.—Editor)

A Cloud Projector

Editor, WONDER STORIES:

The enclosed clipping from the New York World-Telegram should be of interest to all who read that remarkable story, "The Time Projector".

George K. Addison,
94 Grand Place,
Bronx, New York.

German movie fans may soon watch one of their favorite stars perform in the clouds over Berlin.

Dr. Manfred Mannheimer, inventor of a "cloud projection machine," already has projected into the sky series of still-photographs during the last few nights.

They were visible for miles. The inventor, who hopes to interest advertisers in the apparatus, said it would be a simple matter to project a cartoon film. The cartoons would be stencilled through an acid process on a metal band to withstand heat of the apparatus.

The machine is a closed box containing two mirrors arranged to reflect rays of a powerful searchlight through a stencil.

(The announcement of the cloud projector, following so closely on the publication of "The Time Projector" in *WONDER STORIES*, is just another indication that we must not scorn too quickly the product of our writers' imaginations. And those scientific wonders that are to come will probably dwarf into insignificance those that we have already seen.—Editor)

Does Exist to Those Who Can See It

Editor, WONDER STORIES:

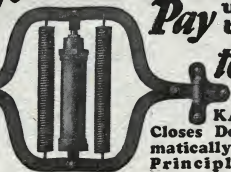
The Reader Speaks column in August issue certainly does show that your readers are inclined toward the mystical and unseen side of humanity. This shows a move in the right direction. I mean that they are reaching out and trying to grasp what lies out of the reach of the ordinary perceptions.

(Continued on Page 714)

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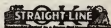
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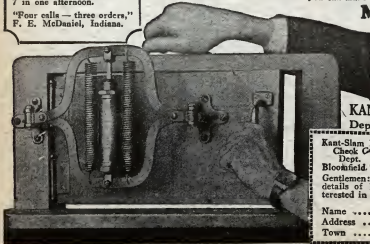
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on page 718 of this
issue.

THE READER SPEAKS

(Continued from Page 712)

Mr. Glasser's letter shows a highly developed interest in the work that I believe this magazine stands for. The human Anra is so much a fact to those that have developed, as the scent of flowers are to those who have keen sense of smell. Both are vibrations just as radio waves and sound waves—they must have the proper instruments or they pass undetected.

To a deaf person sounds are not recorded in the brain, so of course they cannot prove that sound exists. To those whose pineal glands are developed, vibrations not recorded by others make impressions on the consciousness.

My own experience shows that by the abstinence from the eating of flesh, coffee, tobacco, narcotics, white flour and other highly starched products, refined sugar and alcoholic beverages and food combinations that set up toxic conditions in the system; my sense perceptions have become keener to these vibrations of higher waves. The anra does exist to those who can see it and telepathy exists to those developed to receive by the inner ear.

Mrs. Harris' letter shows a start in the right direction. It seems to me that our amusements could be made much more interesting by some science fiction introduced into motion pictures. I suggest we all take our lady author's advice and write to film companies asking for a few real pictures.

Some day a colony can be started like the Lano cooperative colony in Louisiana. There persons interested in scientific development live and assist each other and try to erect a state 500 years ahead of our ordinary life. Science would rule in every department and new ideas transmitted to the outside world. With a scientific diet, agriculture, housing and cooperation, a new civilization could be started. Perhaps an idea of this sort is underway already.

Ward Stockham,
Box 84,
Friendswood, Texas.

(We agree with Mr. Stockham that many people have senses so highly developed that they can see and hear and feel things that ordinary people can not. We think that no scientist, no matter how conservative, will not agree to this statement also.)

The question is, do these people really see things, or are they in such a physical and mental and emotional state that visions appear to them.

Now, it is impossible to tell whose vision is truthful, the vision of the ninety-nine or that of the one. A man by fasting, or by a certain diet or by being aroused to an emotional intensity, can see things just as clearly, perhaps even more so, than people in ordinary health and in an ordinary frame of mind. Science is just beginning to realize how important is the state of our being on what we see, hear, feel and think.

A man or woman under the influence of a great fear may be positive that he sees someone following him along a dark street. He may hear perfectly clear the footsteps of the pursuer; even though it is dark he may see the clothing worn by the pursuer. Now does he really see these things?

What we mean to say is that our mental world includes all kinds of states. In some of them we do have great clarity of vision and can really see things that people in an ordinary state cannot. In other conditions we think we see things, but they may be only mental visions.

If the Lano cooperative colony really exists we would like to know more about it. It sounds interesting.—
Editor)

A Notice For Oklahoma

Editor, *WONDER STORIES*:

I would like to use our "Reader Speaks"—with your kind permission—for another purpose than criticism of "our" magazine. I would like very much to get in touch with some one and this is the only method I know of by which I can do it. I would consider it a great favor if you would print this for me.

Will the science fiction fan from Oklahoma who attempted to get in touch with me while visiting San Francisco and Los Angeles, please write to me at this address as soon as possible.

Forrest J. Ackerman,
530 Staples Avenue,
San Francisco, California.

Make a Deity of Mathematics

Editor, WONDER STORIES:

Since my comment and query on the Lorentz-Fitzgerald contraction seems to have started quite a little discussion, I feel it is time to horn in again with an explanation and more comment.

To begin with I will admit I was struck with the story possibilities of an infinite gravitational mass. Hence my query to Dr. Breuer who can be counted upon to know what he is talking about. His not knowing indicates quite strongly that the question has not been dealt with.

Let us decide that it is the inertia of a body equivalent to its mass at low speeds that approaches infinity as the velocity of light. As Dr. Breuer says, equations are shorthand for fact, and are not to be regarded as sorcery.

This is certainly true of classical equations, though the modern physics is getting to be very largely physics with the fact following the equation, and some of the greatest physicists make a very respectable deity of mathematics. I lean in this direction myself, but Dr. Breuer takes the common-sense attitude which will probably get him further than our blind faith in figures.

All of our physical laws expressed in equations represent tendencies. As nearly as we can tell the world behaves as they indicate. For all purposes, when we have a large error—a large factor of safety—they hold. But when we measure closer when we delve into the realm of the small and particularly of the few, something goes wrong with our equations. Our Gods have fallen and we promptly grab new ones out of the air which do all the old ones did and more.

All the old staid laws and equations of classical physics can be deduced from the freakish modern laws by neglecting details, and taking things as a whole and in the long run.

Newton's laws tell you how a ball will run down a groove but they can't begin to say what happens to the molecules of that ball much less to its atoms and electrons. The new physics is trying to do that and physicists find roughly that taking the molecules as a group seems to be just a wee bit different than taking the ball as a unit.

Consequently, they choose the equation that does the most work and dig in again. And like the menacing robots of the science fiction writer, the equations have a tendency to take over the controls and give birth to others, while the physicists sit by and gaze in wonder.

Whenever he begins to get entirely lost, he just shuts off the power and takes stock until he is sure his brain children aren't running away with him. Right now we're in the midst of a spurt, and since science seems to be rather democratic nowadays some physicists are trying to take stock at the same time. You can get gloriously drunk on modern physics, but if you don't watch your step you're in the gutter instead of the life of the party.

Reaching the July issue I can't quite see why an infinite universe with an infinite mass in every direction pulling with an infinite force should prohibit the solar system. Forces in all directions would quite effectively kill each other off—a cosmic tug of war. I think an infinite universe shocks our imagination much more than our reason. Gravitational attraction can cause a dispersed system to contract toward its center of gravity. Where that is located in an infinite system is beyond me. If the Universe is limited that is something else again, and it is quite possible that it may expand or contract.

Some of the modern theories require that it do so. Observation seems to show some such expansion. But as the editor has so nicely pointed out so far as we are concerned, the most violent of explosions, hurling every star to infinity would be beyond our ability to detect. Aside from these details in which I may be wrong, Mr. Evans' letter and the Editor's comment just about fill the bill.

P. Schuyler Miller
302 So. Ten Broeck St.,
Scotia, New York.

(We are glad that Mr. Miller recognizes the alcoholic content of modern physics. The best explanation of it all was provided by a young philosopher many years ago in his book, "The Philosophy of the 'As If'." His contention was that we had built our science upon the premise that certain phenomena might be true. We recognized, he said, that they did not act as our equations indicated, but we ignored

(Continued on Page 716)



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THE READER SPEAKS

(Continued from Page 715)

the difference. For science was then in the grip of materialism, and equations had to be constructed so that science might have a practical application.

Now, two forces have killed this voluntary blindness. We have gone so far in the practical application of science that we must have now more precise explanations. Second, science is escaping from materialism and becoming, instead of a tool to the practical, an art in itself. Modern physicists don't give a hang if their theories never are used, they present the truth and they are finished.—Editor

The Only Way to Exist

Editor, WONDER STORIES:

When my first year's subscription expired for *WONDER STORIES*, I did not renew it. I preferred to watch the outcome of the struggle of the magazine to a higher plane. I want to tell you that I am satisfied again with *WONDER STORIES*, and that it is at present high in my estimation.

And I'll tell you why! The covers are almost uniformly good, thanks to Paul. Why don't you keep Paul as a standard, and allow no lower grade of illustrations to enter *WONDER STORIES*? I speak of Marchioni especially. I am partial to Impressionism but he seems to be realistic in a stilted way.

Suggestion: In the little note after each title in the Table of Contents, why not have a connected sentence? Your broken phrases are really not attractive. The stories themselves are unusually interesting. "The World Within" was exceptionally fine, although less interesting than its predecessor. In my opinion the latter was more stereotyped.

Either cut down on the editorial note on each story or make them more interesting. Also please tell Jack Williamson not to sacrifice quality for quantity. He could approach his earlier high-water mark if he took more time.

This doesn't seem to show why I approve of *WONDER STORIES*, but all the rest of the magazine is fine.

Here's my contribution to the time travelling mix-up. In "Words to Barter," the men from the future, called A, come to the men of the present, B, and change places with them. Well and good. But, when in the natural course of time, the descendants of the A people reach a point in time where the A's themselves were born, what would happen? The A's wouldn't be born, of course, because their natural parents would not exist. Yet if they weren't born, their descendants wouldn't exist, and thus would admit the existence of the A's natural parents. So the only way these men from the future could exist, except by leaving no descendants, is by not being born.

I'm going to stop before I go batty.

Henry Kuttner,
821 1/2 So. Hope Street,
Los Angeles, California.

(Mr. Kuttner does pose a paradox. No doubt it would be very confusing to have the descendants of A reach a time when they found their world, perhaps even their space, occupied by a totally strange race. Barring the situation of having the A race die out in the meantime, there seems to be no way out of the tangle.)

We must call for help from the time travelling experts among our readers, what can be done to avoid this terrible calamity!—Editor

Ranks Among the Best

Editor, WONDER STORIES:

Once in a while you print a story which "stands out." Such a one is "Rebellion, 5000 A.D." in *WONDER STORIES* for July 1931. It should rank among the best things you have yet published.

Your June editorial and Mr. Glasser's letter in the August number on the human aura are very interesting and I hope the subject will be followed up with scientific data. About three years ago I read across a book printed in England on this subject—it called it "the human atmosphere". It was written by a man who called himself an electrical engineer and in no sense an occultist. He stated that after experimentation he had succeeded in seeing the human atmosphere with the naked eye against the light through sensitized screens. Later I noticed some advertisements offering such screens for sale, but have heard nothing further

about them. It may be that the book I saw in the same as that to which you refer in your editorial.

Why not put the word "SCIENCE" back in the title to the magazine? Seems to me it belongs there.

F. L. Morgan,
R. F. D. 2, Box 400,
1340 S. Walnut Way,
Whittier, California.

(While we have no definite information on the screen Mr. Morgan refers to, we have our doubts about the value of such a device for seeing a possible aura. It would be comparatively simple to make a "screen" that would appear to surround a person with an aura. If the aura business is worth anything, it cannot be settled by merely having some sort of color filter, as the screen appears to be.—Editor)

In Defense of Authors

Editor, WONDER STORIES:

This is just a letter in defense of Schachner and Zagat's "The Emperor of the Stars". I noticed in the July issue a rather sarcastic comment about the blue space of the "new universe". I only hope Mr. Pancoast has not thrown his April issue away. If he will go through it again I think he will notice that it was the quartz sphere which was supposed to light this universe.

It mentions that while the Prestokas communicated by thought with the other worlds, they had never seen them until the arrival of the sphere. Also when the sphere was blown up, the light disappeared and the men were wondering how they could get to one of these worlds when they were projected into their own universe. I hope this will relieve Mr. Pancoast's doubts.

I am a rather new reader but greatly enjoy your stories. This is the first letter I have written so far.

I just finished the August issue. "The Time Projector" ended well I think. "Venus Mines, Inc." was very good also as was "The 35th Millennium". "Twelve Hours to Live" is a puzzler all right. The other two, "The Island of Giants" and "The World Within" I did not care so much for.

Harvey Vogel,
6 Cedar Street,
Nutley, N. J.

(Authors are so much browbeaten by readers that it's hard to have a reader come to their defense occasionally. The job of the writer is hard. He must exercise his imagination to the limit, yet picture things realistically, and yet construct around the science and the product of his imagination a corking good story. Those of our readers who have tried to write science fiction will realize how hard it is.

Naturally writers do slip up occasionally, even the best of them. And although they want to be told about their breaches, readers must remember that it's practically impossible to visualize an entirely new world and have each detail perfectly consistent.

Read the various newspaper accounts of some event, and it will be discovered that of six reporters seeing exactly the same thing, no two will describe it alike.—Editor)

Will Really Be A Menace

Editor, WONDER STORIES:

In regard to Mr. Gernsback's illuminating editorial, I would like to say that he omitted one important development of the machine age; namely—the robot. The possibilities of this machine seem small and insignificant, but when considered carefully assume terrifying proportions. The robot at the present time is an awkward, inefficient object but with development, is slowly being made more and more efficient. Eventually it is quite certain that the robot will be the equal of most unskilled and some skilled labor. When that time comes, the machine age will really be a menace to society, even to civilization because of a factor which Mr. Gernsback emphasizes in his article, the factor of human nature.

The average wage of a factory worker is about fifteen hundred dollars per year. With the perfection of the robot will come mass production of the robot. With mass production will come a decline in price as occurred in other industries. It would pay an enterprising capitalist to replace his human labor by machines for the machine will cost less than the salary of a worker over a short time, will work constantly, will not join unions or ask for a raise in wages.

It is reasonable to assume that many, perhaps most employers, following the dictates of every human

(Continued on Page 718)



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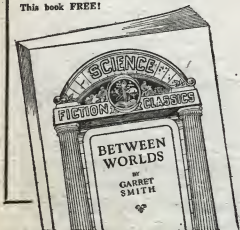
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THE READER SPEAKS

(Continued from Page 717)

being's desire for money, will purchase these machines which can produce for them so much more cheaply. But this attempt to save will prove to be a double-edged sword. The more machines used, the greater the unemployment of human labor which will result in a decrease in demand. Manufacturers will find themselves forced to shut down their factories and lose what they intended to gain.

Robots, if used with discretion would benefit the world greatly, by an arrangement whereby the working man works two hours a day and the robot the remainder. Such a system, provided that the working man still had his former income, would free him to pursue educational and cultural arts. I need not go into the benefits of this. They are self-evident!

But will such a system ever be established? Probably not, unless some scientist, inspired by science fiction perhaps, perfects an elixir which will remove the traits of greed and selfishness from the human race. Then and only then will a Utopia be possible.

Milton Kaletsky,
2301 Morris Ave.,
New York City.

(Mr. Gernsback is, of course, very well aware of the robot, and he has, as a matter of fact, written exhaustively for the past fifteen years on just this phase. One of his own inventions was a Police Automaton, and a number of others of the same class. One point of importance that the average man does not realize, however, is that the word "Robot" is usually misconstrued.)

Popularly, the robot is supposed to be a man-like machine that walks on its feet, and performs all sorts of manual work. While it may be possible, in a hundred thousand years hence, to have a mechanical man who performs simple tasks, it will manifestly remain impossible, even then, to have, for instance, to mention one of thousands—a robot cook. Not by the widest stretch of imagination, can you think of a robot which could cook an entire meal all by itself without the human agency entering the work.

The robot of science fiction has, as a rule, no counterpart in actual practice. On the other hand, we have real robots around us, right now, and have had them for some years. The technical robot is a machine that performs certain single, or more or less complicated tasks, and does them much better than the human being. Such a robot, for instance, is the automatic telephone. The machine replaces the telephone operator, and incidentally, never makes a mistake.

Any adding or calculating machine is a most efficient robot. So are the hundreds of so-called business machines. So is the automatic press which prints a complete newspaper merely by the press of a button. A great deal of the Ford Motor Works are robotized. These are but a few examples, and there are, in use today, many thousands of efficient robots, and they have been in use for a number of years. The trouble, however, never lies with the robot, but with the human beings, and this is what our correspondent points out. Only when the machines over-produce do the human beings suffer. It is not a matter of controlling the machine, but rather of controlling the greediness of humanity.—Editor)

BOOK REVIEW

PROBLEMS IN PHYSICS by William D. Henderson, 245 pages, stiff cloth covers, illustrated, size 6x9 1/4. Published by McGraw Hill Book Co., New York. Price \$2.25.

This book is designed for students of high schools, colleges and universities, and consists of a series of exercises intended to supplement the usual one year's course in general physics, with a supply of material of such range and variety as will be likely to stimulate the student's interest and clarify his understanding.

The method used by the author, from his experience in the teaching of engineering students, is to state a general principle in physics, and then to develop its implications by a number of carefully chosen illustrative problems.

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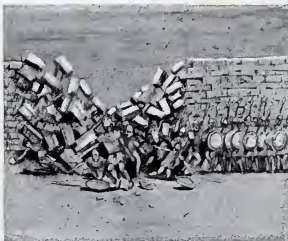
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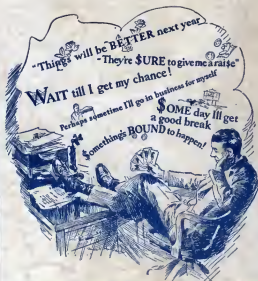
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